Research Outline Qualitative Information on Drug Abuse Situation in Hong Kong

Research Report No. 2

Literature Review
on Drug Abuse Research

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30 June 2024

This report presents an extensive literature review on various topics related to drug use, aiming to provide a comprehensive understanding of the current drug abuse landscape. The review involved identifying studies from the Narcotics Division of the Security Bureau of Hong Kong, BDF-funded research projects, as well as academic studies related to cannabis, drug trafficking, and hidden drug abuse. The literature review primarily covered studies published from 2000 to 2020. Studies that did not align with the research focus or objectives, or those that failed to clearly distinguish between different types of substance abuse, were excluded.

1. Overview of Drug Abuse

The global drug problem remained significant, with opioids being the most lethal substance, followed by widespread use of cannabis, cocaine, and amphetamine-type stimulants. Cannabis, the most widely used drug, saw a significant increase to 228 million abusers in 2022, driven by legalisation in Canada, Uruguay and parts of the U.S.. Synthetic drugs and new psychoactive substances were on the rise, contributing to increasing drug-related fatalities.

1.1 Global Drug Markets

- Drug markets followed economic principles similar to other goods, showing vertical stratification.
- The drug market was divided into levels from importation to retail, with characteristics influenced by socioeconomic and cultural factors.
- Drug dealing often occurred in a competitive, rather than monopolised, market.

1.2 Historical Development of the Hong Kong Drug Situation

- Hong Kong served as a significant transit point for drugs from the Golden Triangle to international markets.
- The role of Hong Kong shifted due to new routes and changing global dynamics.
- Triad societies had historically influenced the local and international drug trade, although their monopoly was debated.

1.3 Contemporary Drug Market in Hong Kong

- Despite Hong Kong no longer being a major transit hub, drug seizures had significantly increased.
- There was a noted decline in reported drug abusers, particularly among the youth, though involvement in serious drug offences remained a concern. Hidden drug abuse remained a critical issue.

1.4   Challenges and Strategies

- The global and regional drug markets continued to pose significant challenges with adapting criminal strategies.
- Effective combat against drug issues required policing, prevention, treatment, and international cooperation.
- Continued research was crucial to understand and address the patterns and operations within drug markets for effective policy implementation.

2.   Hidden Drug Abuse

- Intensified policing had driven drug abusers to more private and hidden locations, such as house parties and secluded areas, but it did not reduce overall drug consumption, as studies in Canada and Australia had shown.
- The use of prescription drugs and the internet had facilitated hidden drug abuse, often diverting drugs from legitimate medical use to illicit markets and complicating efforts to address drug abuse.
- Drug abusers in Hong Kong utilised social capital and formed covert networks to facilitate discreet drug use, making it challenging to track and study these patterns.
- Hidden drug abuse led to underreported drug abuse statistics, potentially misleading policymakers about the true extent of drug problems.

3.   Cannabis Use

- Cannabis was the most widely used illicit drug globally, with increasing acceptance and legalisation in various regions, including Asia, Africa, North America, and Europe.
- The legalisation of cannabis in places like the USA and Canada had led to a higher prevalence and changing attitudes towards cannabis use, especially among youth, who now perceived it as less risky.
- States in the USA where cannabis was legal showed higher usage rates compared to non-legal states.
- Legalisation had shifted many cannabis transactions from the black market to regulated markets.
- Cannabis use was common in social settings like music festivals and among individuals seeking to manage health symptoms or enhance creativity.
- Cannabis use carried potential risks, including dependence, cognitive impairments,

and mental health issues.

4. Drug Dealing and Trafficking

- Street-level drug dealing remained prevalent, with drug dealers adopting strategies like camouflage, trust-building, stashing, and displacement to avoid detection.

- The emergence of commuting drug dealing and the adaptability of drug traffickers highlighted the evolving nature of drug markets.

- Drug trafficking in Hong Kong had evolved with changes in smuggling routes and strategies, focusing on local operations rather than large-scale international trafficking.

- User-dealers and large retail groups characterised the street-level distribution, with significant influence from triad societies in local operations.

- Drug dealing led to community-level consequences such as violence, youth development issues, and impacts on legitimate businesses.

- The rise of online and poly-drug dealing posed new challenges, including increased customer service demands and higher risks of severe legal penalties.

5. Online Drug Dealing

- The use of social media, mobile apps, and cryptomarkets had revolutionised drug trafficking, offering anonymity and convenience to drug buyers and sellers.

- The use of these platforms varied by age, with younger individuals preferring apps and older ones relying on more traditional phone communication.

- Cryptomarkets mimicked e-commerce platforms for global drug trading, employing sophisticated shipping and packaging methods to avoid detection.

- Police deterrence efforts in the online sphere were often transient, with drug markets quickly adapting to enforcement actions.

- Social media platforms were used to advertise drugs, with specific hashtags and emojis guiding potential buyers to dealers.

- Media coverage of law enforcement activities could inadvertently boost online drug trading activity.

- The internet fostered a drug subculture that normalised drug use among its participants, supported by shared norms, distinctive language, and peer interactions.

6. **Stages of the Drug Abuse Journey**

- The report outlined five stages of drug abuse derived from multiple studies and perspectives: 1) Onset, 2) Persistence, 3) Treatment, 4) Relapse, and 5) Desistance.

- Each stage reflected a complex interplay of biological, psychological, and social factors, and the journey through these stages was often non-linear and unique to each individual.

7. **Influences of the COVID-19 Pandemic**

- Consumer demand and availability of cannabis in Australia remained stable regarding the numbers of dealers or the prices of cannabis.

- The demand and accessibility for methamphetamine decreased, leading to increased prices due to reduced supply and operational disruptions caused by travel restrictions and mailing system interruptions.

- Pandemic-induced isolation was linked to increased drug use, particularly cannabis, as a coping strategy for negative emotions, including boredom, stress, and even mental health issues.

8. **Insights from the Literature**

- The literature review highlighted that hidden drug abuse, drug trafficking, and cannabis use were global concerns, indicating the widespread nature of these issues.

- A significant research gap in the study of hidden drug abuse was identified, with variations in terminology and limited research by official agencies across countries.

- A comprehensive research framework was urged to explore early vulnerability factors and the complex interactions between drug abusers and health/social service providers.

- Effective policy and intervention strategies should consider the dynamic and hidden nature of drug abuse, leveraging comprehensive and timely data.

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9.   Overview of Drug Abuse

According to the World Drug Report 2024 by the United Nations Office on Drugs and Crime (UNODC), the global drug problem remains a significant challenge. UNODC (2024) proposed some latest key trends in global illegal drug use regarding the types of drugs:

- Opioids, with 60 million users in 2022, continue to be the most harmful drug class, accounting for the largest burden of disease and most drug-related deaths globally. The use of synthetic opioids like fentanyl is particularly a serious concern, especially in North America, where opioid-related overdose deaths remain high. Despite stable global opioid use, opioid-related deaths are increasing in some regions. Access to pharmaceutical opioids for pain relief remains highly unequal, with 87% of the world's population lacking adequate access. Treatment coverage for opioid use disorders is low, with significant regional disparities and lower access for women.

- Global cocaine production hits a high in 2022, with over 2,700 tons produced. Cocaine use is at an all-time high, particularly in Western and Central Europe, where consumption has surged post-COVID-19. This surge in supply has led to intensifying violence, particularly in transit countries like Ecuador, where homicide rates and cocaine seizures increased five-fold between 2019 and 2022. Despite a decline in the U.S. market, cocaine use and related health harms are rising in Europe. European wastewater data shows an 80% increase in cocaine traces since 2011, indicating rising consumption. Treatment demand in Western and Central Europe rose nearly 60% from 2011 to 2022.

- Cannabis remains the most used drug worldwide, with an estimated 228 million abusers in 2022. Legalisation in countries like Canada, Uruguay, and parts of the U.S. has led to increased harmful use, especially among young adults, and a rise in high-THC products. Adolescents' cannabis use, particularly through vaping, is a growing concern due to its impact on brain development. While legalisation has reduced arrests, racial disparities persist. Recent policy changes in Europe and ongoing trials in other regions reflect a trend towards regulated access, though the illegal market remains significant due to factors like price and quality.

- The use of amphetamine-type stimulants (ATS), including methamphetamine and MDMA, is on the rise globally, with an estimated 30 million abusers in 2022.

Methamphetamine markets are expanding, particularly in East and South-East Asia and South-West Asia. Despite a slight decline in global methamphetamine seizures in 2022, North America and East and South-East Asia remain the largest markets. The report also notes the increasing harm from synthetic drugs, with methamphetamine use contributing to significant health risks, especially in North America and Oceania. Women face greater barriers to treatment for ATS use, and the report calls for gender-specific approaches to address these challenges.

- New psychoactive substances (NPS) markets continue to evolve rapidly, with new substances frequently emerging that evade existing drug laws and detection methods. There were 566 different NPS on the global market in 2022, 44 of which were newly identified that year. NPS use has been linked to a rise in emergency health incidents, including severe intoxications and fatalities, due to the unpredictable effects and potencies of these substances.

Global seizures of ketamine also hit a record high, showing a 70% increase from 2021 in East and South-East Asia and significant rises in various other subregions, reflecting the drug's widening geographic distribution in trafficking (UNODC, 2024).

Furthermore, the global prevalence of synthetic drugs, such as synthetic cannabinoids, synthetic cathinone, and synthetic opioids, is steadily rising. When combined with other substances, these substances can potentially lead to fatal consequences (Carlier et al., 2020; Franz et al., 2020; Mattson et al., 2021). According to Mattson et al. (2021), there was a staggering increase of over 1000% in the death rate involving synthetic opioids in the United States between 2013 and 2019. Additionally, the presence of synthetic opioids was found to be linked to higher death rates related to opioids, heroin, psychostimulants, and cocaine, underscoring the growing trend of combining potent synthetic drugs with other substances (Mattson et al., 2021). The alarming rise in the prevalence of synthetic cannabinoids in recent years is a growing concern due to their closely-associated severe adverse psychiatric effects, including acute psychosis and suicidal ideation (Çelik, 2020; Weinstein et al., 2017). The global drug trends provide a stark warning and call for heightened attention.

9.1. Global Drug Markets

The global drug market is primarily achieved by consistently stimulating the distribution of drugs, which adheres to the same economic principles as other goods (Bean, 2008; Pearson & Hobbs, 2001; Potter, 2009). Given that the drug market manifests a horizontal stratification,

employing economic principles allows us to discern the drug distribution within the market (Coomber & Turnbull, 2007). The formation of a drug market depends on various factors, namely the drugs marketed, the market level, type, location and transaction method, the socioeconomic background of drug traders and consumers, the cultural milieu of the market, and the drug-using context (Taylor & Potter, 2013, p.393; Potter, 2009). Thus, drug market classification unveils diverse characteristics, such as cultural norms, roles, behaviours, and economic aspects (Ritter, 2005, p.6).

Employing economic principles allows us to discern the various strata or vertical divisions of drug distribution within the drug market. Pearson and Hobbs (2001) bifurcated the drug market of England into four levels: importation, wholesale, middle market, and retail-level drug dealing. In the popular view, the structure of drug dealing operations resembles a pyramid model of the commodity market. According to Coomber (2006), the literature suggests a specific hierarchy level within the drug market structure. Although such structural division has not been contested, the low-level drug market and its characteristics are more pronounced than the high-level drug market.

Nevertheless, some studies later proposed that hierarchical or centralised control is not commonly observed in the UK context. Instead, drug markets tend to be highly competitive rather than monopolised (Coomber, 2006, p.125). Pearson and Hobbs (2001) also argued against the perception of the drug market being controlled from the top by supporting that most drug dealers function as independent traders and are not bound to purchase drugs from any single supplier. Drug dealers usually do not adhere to one supplier as they prefer multiple options for sourcing drugs, which helps them avoid supply disruptions (Reuter, 2000). Moreover, while some drug markets may be highly organised, most studies found that disorganisation is a common feature in the drug market (Coomber, 2006; Pearson, 2007). Nicholas (2008) supported the notion that the drug market, particularly the cannabis market, is predominantly characterised by competition among independent drug dealers, like the situation in the Mainland. Although the Mainland was recognised as a prime producer of the drug "Ice" (Reid et al., 2006), Chinese drug dealers generally operated on a smaller scale instead of a hierarchical organisational structure (Li & Liu, 2017).

Low-level drug markets are resilient to the law enforcement environment. Hales and Hobbs (2009) conducted a case study into drug markets in a London borough. The study found that these illegal markets operated "24/7" and adopted typical business practices such as

conducting risk management and penetrating new markets when opportunities arise to remain competitive. Gangs operated much of these drug dealings and recruited youths through intimidation to participate in their retail-level drug dealing business. This denoted that treating drug trafficking as a legitimate business enabled dealers' operations to flourish into sophisticated organisations. Coomber & Moyle (2017) explored the growth of street-level drug trafficking, revealing that drug dealers had been adopting outreach methods of business practice known as commuting drug dealing. Such practice allowed them to expand their business by moving outside the inner-city markets saturated with other drug traffickers and constantly pushing their retail around, providing anonymity for the drug traffickers. By commuting to provincial areas, drug dealers targeted vulnerable populations and exploited their vulnerability to recruit them as "drug runners" to sustain drug supply operations. This new drug supply model requires traffickers to prioritise using the disadvantaged over the convenience of inner-city drug markets. A similar practice is also utilised in Canada (Butera, 2013). The development of this new drug supply model demonstrates the adaptability of drug trafficking.

9.2. The Historical Development of Hong Kong Drug Situation

As one of the world's leading ports, Hong Kong was an important transit point connecting Southeast Asia's high-level transnational drug economic activity to international markets (Chalk, 2000). Hong Kong, located near southern China and the Golden Triangle, had a rich history as a transit hub for drug trafficking from Southeast Asia to Western nations. Before establishing the Chinese route in the mid-1980s, heroin originating from the Golden Triangle was primarily smuggled into Thailand before being shipped to Hong Kong for onward transit to Europe, the United States, and Australia (Chalk, 2000). In the late 1970s, the Mainland introduced an open-door policy that encouraged private entrepreneurship, prompting Chinese individuals living in border regions to take advantage of cross-border trade.

The significant rise in drug trafficking from the Golden Triangle to China could be attributed to two primary factors. Firstly, China had a sizable domestic market for drug consumption. Secondly, Chinese drug traffickers operating in the Golden Triangle required a safe route for the heroin trade, giving rise to the establishment of a new route in the mid-1980s. Heroin was smuggled from Burma into Yunnan, then through Guizhou, Guangxi, and Guangdong, before finally reaching Hong Kong for onward transit to the international market (Chin, 2009). However, the rapid development of port facilities in southern China in recent years had provided a safe alternative route for drug traffickers (Laidler et al., 2000).

Consequently, Hong Kong has ceased to be a transit hub for the transit or trans-shipment of large consignments of drugs.

The previous literature shows evidence of a well-established operation for importing heroin in Hong Kong. Considering the past transit hub role of Hong Kong (Chalk, 2000) and the opioid preference in South and South-West Asia, drug manufacturers and triad societies regarded Hong Kong as one of the ports for transiting heroin in 2000s (Laidler et al., 2000; So, 2011). It had been observed that criminal syndicates were operating in the Mainland with the proficiency to organise and execute bulk transactions for the importation of heroin (Laidler et al., 2000; So, 2011).

According to So (2011), drug trafficking was carried out by a small consortium of investors comprising two to seven individuals who communicated with their designated "broker" in Hong Kong or the Mainland. The broker acted as the first course of trafficking, while investors were equivalent to the second course. Every time drugs passed through a course of trafficking, the price would increase, and the purity of drugs would be diluted to maximise profit (Laidler et al., 2000).

In general, the broker was responsible for coordinating the acquisition and transportation of heroin and settling the payment with the supplier. Once the heroin reached Guangdong, the broker would engage a courier, who would be paid around HK$1,000 to HK$5,000 per shipment, to bring the drugs into Hong Kong (Laidler et al., 2000). Upon arrival in Hong Kong, the investors arranged to collect the drugs and purchase the specified units (Laidler et al., 2000; So, 2011). They then sold the heroin to one or more distributors responsible for processing and packaging the drugs. The distributors eventually sold the drugs to lower-level drug traffickers for retail sale in the local drug market (Laidler et al., 2000).

The involvement of Hong Kong triad members in global heroin trafficking was supported by Chu's (2000) study. These triad connections often presented opportunities for individuals or groups to engage in drug deals with like-minded people. The Hong Kong triad society even formed partnerships with political leaders and business organisations to sustain their influence and ensure fluent operation (So, 2011). Despite the lack of solid proof that triad societies had a monopoly over the global drug trade (Chu, 2000), they continued to impact drug trafficking at both local and international levels remarkably. Even if triad membership was neither a requirement nor an advantage for the global drug trade, their experience, knowledge,

connections, and financial resources mattered (So, 2011). Individual triad members were typically involved in drug dealings operating in private, and triad boundaries were no longer applied once someone became involved (So, 2011). In such a sense, heroin trafficking could be frequently organised by members of different triad societies, local or international, who joined forces in drug trafficking based on personal relationships rather than shared triad memberships. Nonetheless, triad affiliations were crucial for establishing connections and building trust among members (Laidler et al., 2000). Therefore, the popular notion that all drug trafficking was conducted exclusively by triads (Main, 1991, p.151) and the tendency of the international media to sensationalise triad links were not entirely accurate.

Given Hong Kong's declining role as a central hub of drugs, drugs that entered Hong Kong were intended for regional consumption and sale (Finckenauer & Chin, 2007, p.81). Unlike the international drug trade, triad bosses controlled street-level drug dealing in Hong Kong. The triads had a long history of involvement in drug dealing businesses in the local market, including Sun Yee On, Wo Shing Wo, and 14K (Finckenauer & Chin, 2007). In Hong Kong, a triad membership was often considered a prerequisite for entering the drug dealing business due to the relevant experience, knowledge, connections, and financial resources. More importantly, it was extremely dangerous for non-triad members to sell drugs on the street, as triad societies would beat them up for running a lucrative business in their territories. Also, since there were many police informants in the trade, these drug dealers would likely be arrested sooner or later (Chu, 2000, p.84). Before 1974, street-level drug dealing in Hong Kong was operated quite openly, and drug dealers enjoyed the protection of corrupt police officers. Aligned with the patterns observed in other countries, it was common for dealers to offer bribes to government officials or personnel to ensure a smoother and more efficient transaction process (So, 2011; Tzvetkova et al., 2014). However, establishing the Independent Commission Against Corruption in 1974 broke the link between triads and the police corruption syndicate. Hence, drug dealing in Hong Kong has become more covert consequentially.

Since the 1990s, Hong Kong's triad societies have undergone gradual disorganisation and transformation into loose cartels (Chu, 2000). Triad members often collaborate with legitimate businesspeople to invest in various legal businesses, such as restaurants, nightclubs, bars, interior decoration, and the film industry (Chu, 2000, 2005). For instance, local triad societies cooperated with legitimate club owners to make a profit. The demand for party drugs, such as ketamine and ecstasy, rapidly increased during the cultural rave party era as these drugs

enhanced the sensory experience, like dance, music, and light shows at rave parties (Tam et al., 2018). Club owners allowed triad members to sell ecstasy and ketamine within the clubs, and these members were referred to as "doctors". While the triads profited from the sale of ecstasy and ketamine, legitimate club owners profited from the sales of drinks, admission charges, and a share of the drug sales, achieving a win-win situation. The presence of triads could also ensure the club's smooth operation and protect it from threats. However, no evidence existed of conflict or aggressive competition between different triad societies in the drug market (Laidler et al., 2000). In other words, triad societies might have worked together to run this lucrative business rather than compete with each other.

Along with the era of the dispersed party and hidden drug abuse, people shifted towards smaller, unlicensed parties in harder-to-detect locations or even home-based ones (Tam et al., 2018). The more concealed and less organised nature brings challenges to understanding the contemporary drug situation in Hong Kong.

9.3. The Contemporary Drug Market in Hong Kong

Even though Hong Kong is no longer a transit hub for drug smuggling, the total amount of drugs captured has surged in the past decade. In 2021, the Customs and Excise Department and Hong Kong Police Force detected 4,438 cases and seized a total of 14,000 kilograms of drugs (GovHK, 2022). This exhibits a 15% increase in cases and a 150% increase in quantity compared to 2020 (GovHK, 2022).

According to the Legislative Council Panel on Security (2023), a decreasing trend in reported drug abusers was observed, dropping from 6,095 to 5,235, with a 19% decline in reported drug abuse among young people aged under 21 in 2022 when compared with that in 2021. Total arrests for drug-related offences had also declined in the same period. Cannabis was the primary drug abused by young arrestees aged under 21. Despite the downward trend in both reported and arrest statistics, the involvement of young people in serious drug offences continues to warrant attention.

Moreover, there has been a continued decline in the overall reported drug abusers, including the newly reported abusers and the proportion of those aged under 21 in 2020 (Legislative Council Panel on Security, 2023). Since newly reported abusers had a median drug history of 4.2 years in 2022, the Hong Kong Government expressed concern about the situation of the hidden drug abuse problem and the concern about youth involvement in drug-related

offences (Legislative Council Panel on Security, 2023).

All in all, the drug issue remains a significant challenge worldwide, with drug markets continuing to thrive at both regional and global levels. The severity of drug issues prevails, with several record highs reported. Criminal groups and drug traffickers constantly adapt their survival strategies, such as the collaboration between triad societies and legitimate businesspeople in Hong Kong's local drug market. Hence, it is vital to perpetually enforce various efforts to combat drug issues effectively, including aggressive policing practices, prevention and treatment programs, and international cooperation to disrupt drug trafficking networks. Additionally, intensive research is essential to reveal drug issues' patterns, operations, and constructs, which contributes to implementing more comprehensive and timely policies.

10.   Hidden Drug Abuse

Tightening law enforcement actions related to drug use in disco and rave parties has driven drug abusers underground (Lam et al., 2004; Tam et al., 2018). Intensified policing has led party organisers to hold events in dispersed, private, and hidden areas where unregulated drug use can occur without fear of police surveillance, a phenomenon referred to as "hidden drug abuse" (Tam et al., 2018). Non-dependent recreational drug abusers usually have lower compulsivity and impulsivity, as their drug consumption pattern does not affect their daily functioning, relationships with significant others, and duties in school and work (Chie et al., 2015). Changes in drug use patterns, such as a preference for more potent mental stimulants over party drugs or the use of drugs outside the licensed indication, also contribute to the rise of hidden drug abuse (Lam et al., 2004; Tam et al., 2018).

Hidden drug abuse contributes to a reduction in official drug abuse statistics, which may wrongly imply an improvement in the drug abuse situation (Chan et al., 2020; Tam et al., 2018). As more drug abuse behaviours occur in hidden areas and go undiscovered, the false inference of amelioration in the overall drug abuse situation can lead to policy decisions that do not accurately reflect the actual drug abuse situation in the region. This potentially exacerbates the problem rather than addressing it.

Although Zhong and Lee (2017) revealed a gradual diminish in cross-border substance abuse among Hong Kong residents since 2008 due to the emergence of affordable new substances and social support from friends, substance abusers are now more hidden in Hong Kong (Tam et al., 2018). This is attributable to drug abusers having accumulated specific social capital to facilitate their discreet drug use, forming exclusive and covert drug dealing networks (Chan et al., 2020; So, 2011). Nevertheless, there is still a lack of in-depth studies on the patterns and characteristics of drug dealing and its relationship to hidden drug abuse in Hong Kong.

10.1. Intensified Policing

Policing practices, such as "hot spots policing", and the way the government handle drug abuse cases certainly contribute to the upsurge in hidden drug abuse (Wood et al., 2004; Tam et al., 2018). Most policymakers rely on police enforcement to curb drug abuse problems, but police enforcement tends to respond to drug crimes solely with large-scale "crackdowns" (Wood et al., 2004). Wood et al. (2004) examined the outcomes of the large-scale drug

crackdown in Vancouver's Downtown Eastside in 2003. Two groups of statistically similar drug abusers had their blood samples drawn and were interviewed before and after the crackdown. On comparing the drug use patterns, Wood et al. (2004) found no statistical significance in the degree of increased police activities and the sale of drugs, the type of drugs, or the volume of drugs being abused. Such a finding is supported by the fact that there was little change in the daily reported use of certain drugs (Wood et al., 2004). Coincidentally, drug abusers stated that the police presence had led them to displace their preferences on where they consume drugs (Wood et al., 2004). This exemplifies that aggressive policing practices do little to combat drug abuse but shift drug crimes to neighbouring areas out of police surveillance, giving rise to the hidden drug abuse figures. The findings are further supported by Small et al. (2006), who studied drug crackdowns in Vancouver. The researchers emphasised that the reduction in visible drug abuse in police-targeted areas is offset by the increase and establishment of drug use in alternative locations.

An ethnographic investigation of drug abusers' responses to police crackdowns on drug markets in Australia found that drug abusers and dealers merely adapted their practices to evade the police (Aitken et al., 2002). Many drug abusers explained that police crackdown efforts were transient, whereby drug market functioning eventually reverted to normal shortly (Aitken et al., 2002). The reason was that drug abusers became aware of police presence and the relocation of street drug markets to unpoliced areas quickly through 'grapevine-like' communication (Aitken et al., 2002). A drug abuser further noted that modern technology and mobile phones to facilitate drug businesses made it increasingly easy for the drug community to adapt their drug activity out of reach from the police (Aitken et al., 2002). Thus, drug abuse spread to neighbouring metropolitan areas or even the online sphere to resume normal drug operations, which resulted in hidden drug abuse figures. The street drug scene, solely in the more visible areas, was successfully curbed through police efforts. After all, thanks to the drug community's resilience and adaptation, the drug abuse issue has only become invisible to officials.

A review conducted by Kerr et al. (2005) also highlights the phenomenon of hidden drug abuse in the United States. The researchers stress that an intensified enforcement of open drug markets causes the displacement of drug crimes, with its consequence cascading on the drug abusers themselves (Kerr et al., 2005). As a response to drug market enforcement, drug abusers seek out covert non-public locations to continue their drug abuse (Kerr et al., 2005). In the United States, private areas to abuse drugs are colloquially referred to as "shooting galleries",

which are hidden indoor spots where drug-taking behaviours flourish (Kerr et al., 2005). Many drug abusers flock to such galleries for fear of arrest if they continue abusing drugs more overtly (Kerr et al., 2005).

10.2. House Parties

On top of discos and clubs, house parties are considered an equally valuable location, or even a preferred location, for youths to use recreational drugs. A common reason cited for this is the lack of surveillance on their behaviours during the party, freeing them to participate in drug use with limited sanctions (Ravn & Duff, 2015). Previous research has pointed out that youths abuse a more comprehensive range and a greater quantity of illicit drugs in private than public spaces, owing to the closed-off setting (Race, 2009). It is suggested that due to the low likelihood of arrest by law enforcement authorities, youths in private house party settings are less restrictive with their drug abuse than in public settings, like a disco or a club. The difference in drug-taking behaviours by location highlights the prevalence of hidden drug abuse among youth. This points to the seamy side of a nation's drug abuse problem that has evaded the attention of officials and government agencies, leading to the underreporting of actual drug abuse figures.

10.3. Illegitimate Use of Prescription Drugs

It is commonly believed that illicit drugs, such as heroin and cocaine, have the most significant risk of abuse. However, a closer examination of drug abuse reveals that prescription drugs also play a vital role in the overall drug abuse problem (Haydon et al., 2005). In Canada, evidence shows that prescription drugs such as stimulants, benzodiazepines (sedative-hypnotics), and opioids (narcotics) are being diverted into the illicit drug market for drug abuse purposes through primary methods of fraudulent drug prescriptions and robbery (Haydon et al., 2005). Furthermore, Fischer et al. (2010) reported that the diversion routes of prescription drugs for non-medical use are heterogenous, with a large share of non-medical prescription drug use being sourced from friends and family. It is a common practice in the Western world for individuals to set aside a portion of their prescribed medication for sale in the illicit drug market (Grzybowski, 2004). Grzybowski (2004) suggested that highly regulated drugs, such as opioids, sustain most illegal sales. Although prescription and illicit drugs compete for sale in the drug market, Vancouver police focus mainly on illegal drugs and the trade of prescription drugs merits nothing more than an official warning (Grzybowski, 2004). This is likely because

carrying a prescription for a particular drug is often justifiable for its presence, causing officials to overlook its potential for abuse (Grzybowski, 2004). With drug abuse hidden under the guise of medical use, it is more challenging for official reporting agencies to capture the actual drug abuse demographics, intensifying the hidden drug abuse issue.

10.4. Hidden drug abuse in Hong Kong

According to the report from the Central Registry of Drug Abuse (2022), the number of newly reported drug abusers in Hong Kong has decreased from 2,029 in 2016 to 1,619 in 2019. However, this does not necessarily imply that drug abuse has declined overall due to the possibility of hidden drug abuse that is difficult to identify. The report also shows that from 2013 to 2022, the proportion of drug abusers who took drugs at home or a friend's house increased from 52% to 62%. This indicates that hidden drug abuse has become more prevalent in recent years. Such findings are also supported by the Lam et al. (2004) study that revealed how Hong Kong youths are immersed in the underground rave culture and engage in risky behaviours as there is little risk of arrest.

There are several reasons for the emergence of hidden drug abuse in Hong Kong. Firstly, large-scale rave parties and discos have diminished in recent years due to police crackdowns on drug-related activities at these events (Tam et al., 2018). Instead, small-scale events like the Underground Rave Culture have emerged, taking place in more private settings like small-scale discos/dance clubs, own homes, or friends' homes. This caused drug-taking activities to become less explicit and only accessible through personal networks (Tam et al., 2018). Another reason for hidden drug abuse is related to changes in the types of drugs taken, with psychotropic drugs gaining more popularity than traditional drugs or narcotics analgesics like heroin (Tam et al., 2018). As withdrawal symptoms upon discontinuation may not always manifest as physical signs and symptoms (Schifano, 2020), abusers are not easily identified. Moreover, the methods of drug consumption often encourage individuals to remain in secluded and private locations. For example, "Ice" (Crystal methamphetamine) requires specific equipment for taking, such as bottles and straws with filtered water, meaning that abusers need to seek privacy to take Ice. In addition, the Internet facilitates drug dealing by serving as an e-commerce marketplace for online drug shopping, aided by technologies like home delivery services. Thus, hidden drug abuse is caused by several push and pull factors, highlighting the need for effective and targeted interventions to address drug abuse in all forms.

To sum up, the prevalence of hidden drug abuse is a significant issue that has evaded the attention of officials and government agencies worldwide. The use of aggressive policing practices, such as crackdowns on drug markets, has led to the displacement of drug crimes and the spread of drug abuse to neighbouring metropolitan areas or even the online sphere. After large-scale crackdowns, private locations have become popular among youths to abuse drugs due to the lack of surveillance and limited sanctions. Additionally, the diversion of prescription drugs into the illicit drug market for non-medical use has become a significant contributor to people abusing drugs covertly in terms of accessibility. With drug abuse hidden under the guise of medical use, it becomes increasingly difficult for official reporting agencies to capture the actual demographics of drug abuse. Officials must acknowledge the existence of the hidden drug abuse phenomenon and adopt more effective strategies to combat drug abuse in all forms. However, insufficient knowledge of hidden drug abuse patterns, operations, and constructs is available. Hence, in-depth research investigations are demanded to understand this hidden phenomenon, particularly the contextual variations that may present in different societies. By conducting thorough research, we can gain a better understanding of the underlying factors behind hidden drug abuse and develop more targeted and effective interventions to address this issue.

11. Cannabis Use

Cannabis is the most widely used drug (UNODC, 2024), with a report of nearly half of Canadian aged 15 or above (Rotermann, 2019) and more than 11.8 million young adults in the United States (National Institute of Drug Abuse, 2021) having tried it. Hall and Degenhardt (2007) estimated that approximately 4% of all adults worldwide consumed cannabis in 2004, with major global regions like Asia, Africa, North America, and Europe reporting cannabis consumption. However, the most significant share of estimated global use is claimed by Asia and Africa, which can be attributed to their larger populations (Hall & Degenhardt, 2007). When comparing the prevalence of cannabis use in developed versus developing countries, Hall and Degenhardt (2009) reported higher prevalence rates in developed countries than in developing countries. In contrast to the general belief that cannabis prevails only among youth, cannabis is also popular among old adults (Kuerbis et al. 2014).

The legalisation of cannabis has had a significant impact on various aspects of society, including public perception of the risk of drugs, market dynamics, commercial interests, and the young population (UNODC, 2024). The harmful daily use of cannabis has been reported after the legalisation, especially among young adults (UNODC, 2024). Goodman et al. (2020) examined the difference in the prevalence of cannabis use between regions that have legalised recreational cannabis use and areas where cannabis use remains illegal in North America. It is found that the majority of frequent cannabis users in the United States is considerably greater in legalised states than the prohibited states. Interestingly, the prevalence of cannabis consumption in legalised states in the U.S. (61.7%) was more significant than in Canada as a whole (56.6%), where cannabis use is legalised; yet, Canada's cannabis prevalence was higher than that in illegal states in the U.S. (Goodman et al., 2020).

Among the prison population, the prevalence of cannabis use is also significant. According to figures from the Bureau of Justice Statistics in the United States, 21% of state prisoners and 20% of federal prisoners were under the influence of cannabis at the time of their offence (Maruschak & Bronson, 2021). An average of 80% of prisoners reported having consumed cannabis at least once in their lifetime (Maruschak & Bronson, 2021). While the evidence does not suggest that using cannabis makes one more likely to be incarcerated for a crime, current statistics reveal that it may predict the level of violence used in the offence (Maruschak & Bronson, 2021).

Given the prevalence of cannabis use worldwide, the following will summarise critical factors from the international literature to understand the contemporary trend of cannabis use and discuss the Hong Kong cannabis use situation.

11.1. The Legalisation of Cannabis Use in Foreign Countries

The legalisation of cannabis for medical and non-medical use has substantially impacted the prevalence of cannabis use in the United States and Canada. In the United States, California was the first state to legalise cannabis use for medical reasons, leading to legalising cannabis in other states. An analysis of several nationally representative survey data found that following the liberalisation of cannabis use policies, states have seen an increase in the prevalence and frequency of cannabis usage among adults over the age of 21; however, the rate of cannabis use has not changed among teenagers (Leung et al., 2018). Despite concerns about the impact of legalising cannabis on adolescent use, evidence from such surveys has failed to demonstrate a clear link between the liberalisation of medical marijuana policies and an increase in teenage use (Leung et al., 2018). Researchers posit that adolescent cannabis use is higher in states that have loosened medical marijuana consumption; however, this merely reflects greater usage of medical marijuana before the passage of liberalised medical marijuana policies (Leung et al., 2018). After the liberalisation of cannabis use for medical purposes, the frequency of cannabis use primarily increased in those who have previously taken cannabis (Leung et al., 2018). Although it is legal to obtain cannabis to relieve medical ailments, the frequency and dosage of cannabis use for adults already consuming cannabis in legalised states has increased rather than the rates of new adult cannabis users.

Gorman and Huber (2007) conducted a study using the drug abuse monitoring system to examine whether introducing liberalised cannabis laws for medical use increased widespread cannabis use in arrestees or emergency room patients. Their analysis discovered that the implementation of medical cannabis laws in the United States was not correlated with the rise in cannabis use in arrestees or emergency room patients. Similar results from their study of other states' published data further supported the authors' findings. In line with the findings of Leung et al. (2018), it can be concluded that the legalisation of cannabis for medical use has not directly led to the increase of cannabis use populations.

Canada legalised the consumption of cannabis for non-medical use in 2018, following the legalisation of medical cannabis use. Survey results showed that 14.9% of Canadians

reported using cannabis in 2018, prior to legalisation, whereas 16.8% reported using cannabis in 2019 (Rotermann, 2020a). Subsequently, Rotermann (2021) found that cannabis consumption continued accelerating in 2020, with 20% of Canadians reporting using. This expansion in cannabis use after legalisation could be mainly attributed to an increase in consumption among people aged 25 or older from 13.1% to 15.5% and an increase in consumption among males from 17.5% to 20.3% (Rotermann, 2020a). The researcher put forward that this trend of rising cannabis use is not unexpected, given the increased accessibility to cannabis suppliers and the widened method of legal consumption (Rotermann, 2021). One of the reasons for legalising cannabis was to remove the sale of cannabis in the black market and to keep organised crime at bay (Rotermann, 2021). The rise in legal cannabis use following legalisation reflects the transference of cannabis transactions into the legal and regulated market, pointing to the effectiveness of the legalisation policy.

11.2. Attitude Changes Towards Cannabis Use

Attitudes towards cannabis use have undergone remarkable changes over the past few decades, along with the legalisation of cannabis use. During the United States prohibitionist movement, cannabis use was widely perceived as dangerous and linked to uncontrollable psychosis in users (Carliner et al., 2017a). However, by the 1980s, attitudes towards cannabis use began to shift, with growing advocacy for decriminalisation and legalisation of the drug (Carliner et al., 2017a). Today, perceptions surrounding cannabis use are becoming increasingly optimistic, particularly among young people. The data provided by U.S. national surveys depict that those perceptions of cannabis use are becoming more favourable, especially among adolescents who believe that weekly cannabis use only carries a slight risk of harm (Carliner et al., 2017a). Between 2002 to 2014, the prevalence of the perceived risk of harm in cannabis usage fell from 50.4% to 33.3%, whilst the majority of no perceived risk of harm rose from 5.6% to 15.1% (Compton et al., 2016). Similarly, referring to national surveys, many adolescents believe that weekly cannabis use carries only a slight risk of harm, while the perceived risk of harm among adults has also decreased in recent years (Carliner et al., 2017a; Compton et al., 2016). However, it is crucial to acknowledge that cannabis use carries potential risks, including addiction, brain damage and threats to mental health (Volkow et al., 2016).

The normalisation of cannabis use has been particularly notable among youth culture, with interviews and surveys indicating that cannabis use has become integrated into mainstream culture (Sandberg, 2011). Some interviewees in Sandberg's study (2011) even went to the

extent of describing how cannabis enhances one's creativity while downplaying the harmful effects of cannabis use, believing that it is "just a plant" (Sandberg, 2011). An online survey conducted on university students from different European countries found that those who use cannabis themselves hold the most permissive attitudes toward cannabis (Dempsey et al., 2016). Though most survey respondents reported not being cannabis users, they noted that many of their peers from their social circle take cannabis (Dempsey et al., 2016). This illustrates the evolving attitudes surrounding cannabis use from a period when cannabis use was considered extremely dangerous and ludicrous to be widely accepted and normalised in particular communities. This changing attitude towards cannabis use has been driven partly by legalising and decriminalising the drug in some countries, which has altered public perception (Hall & Lynskey, 2016).

11.3. Risk Factors for Cannabis Use

Like many drugs of abuse, several prominent risk factors induce one to involve themselves in cannabis consumption. To examine the risk factors of adolescent involvement in cannabis consumption in the United States, van den Bree and Pickworth (2005) conducted interviews with middle and high school students registered under the National Longitudinal Study of Adolescent Health. Although the study found that a majority of students had not tried cannabis previously, on closer examination of those who had, the researchers noted three significant risk factors: personal or peer involvement with substances, adolescent delinquency, and school problems (van den Bree & Pickworth, 2005; Hall, 2006). The male students attained the highest mean scores on all relevant risk factors, aligning with current findings that there is a greater prevalence of cannabis use in males than females (Carliner et al., 2017a; 2017b; National Institute of Drug Abuse, 2021). By viewing peers as role models, the researchers posit that peer influence may induce adolescents to try cannabis by modelling their observable behaviour. When interacting with deviant peers, the social setting may encourage adolescents to attempt consuming substances, leading to the onset of cannabis use (van den Bree & Pickworth, 2005). They also point out that deviant peer affiliation increases adolescents' relapse rates, making it harder for effective treatment (van den Bree & Pickworth, 2005). Regarding the risk factors of school problems, van den Bree and Pickworth (2005) reason that adolescents spend much of their lives at schools, where teens learn appropriate social norms. Thus, a dissatisfactory school environment may encourage deviant behaviour.

In addition to social risk factors, research suggests that intrinsic personality traits may

also contribute to cannabis consumption. Hecimovic et al. (2014) used the model of substance abuse developed by Conrod et al. (2000) to match personality types with motives for cannabis use and identify personality risk factors. Firstly, the study showed that anxious individuals are more likely to use cannabis for social conformity. They feel that cannabis helps them socialise and fit in better with others in group settings. Meanwhile, those who are more introverted and hopeless are more likely to use cannabis for coping motives. They view using cannabis as a way to relieve negative emotions or escape life problems. Individuals who are thrill-seekers by nature are also likely to use cannabis for expansion purposes. They leverage the psychedelic properties of cannabis to help with creativity or to think in different ways. Finally, those with impulsive personality types are more likely to turn to cannabis due to its accessibility and their lack of ability to resist temptation (Hecimovic et al., 2014). The researchers also note that impulsive personality types may struggle to examine the long-term consequences of their actions. Thus, they may use cannabis as a short-term solution to problems. In a nutshell, identifying different personality types and their possible motives for cannabis use can help highlight individual risk factors for cannabis use.

Recent research has also explored the interaction between genetic and environmental risk factors for cannabis use. Gerra et al. (2019) recruited cannabis users from treatment centres in Italy and controlled participants from hospitals and universities. Through DNA analysis and participant comparison, the researchers identified a particular gene associated with cannabis use. When examining the environmental data collected through participant surveys, Gerra et al. (2019) found that parental emotional and physical neglect increased one's vulnerability to cannabis use. This was evidenced by the cannabis users' report of low parent-child attachment.

Conversely, the control group was more likely to report affectionate and positive parenting experiences, implying that parental care acted as a protective factor against cannabis use (Gerra et al., 2019). By integrating the two data sets into the final model, it is revealed that genetics had an inconsiderable influence on cannabis use, highlighting the critical role of environmental factors in susceptibility to cannabis use (Gerra et al., 2019). However, despite the statistical insignificance of genetic factors, the researchers argue that environmental risk factors can mediate the influence of genetic risk factors on cannabis use. Experiencing neglectful parenting styles may activate the gene associated with cannabis use, which increases one's risk of using cannabis casually. Earlier studies that failed to identify a gene associated with cannabis use also found an interaction between genetic and environmental risk factors in

inducing individuals to use cannabis (Meyers & Dick, 2010; Hines et al., 2015).

11.4. Patterns, Characteristics and Consequences of Cannabis Use

There is an accelerating trend of cannabis use in Hong Kong, which is becoming a concern for drug abuse in the region. According to the Central Registry of Drug Abuse (2022), cannabis use was the second most common type of newly reported drug abuse (31%) and the most common type for the reported young drug abusers aged under 21. Coherently, cannabis is one of the most prevalent illicit drugs in many Western countries, with studies estimating that nearly half of Americans have ever used cannabis (Loflin et al., 2017; Noack et al., 2011). Research has also shown that places with legal protection for medical cannabis dispensaries have a higher risk of cannabis use than places without legal protection (Cerdá et al., 2012; Hasin et al., 2015; Pacula et al., 2015). However, there are ongoing debates about the use and legalisation of cannabis, as well as the consequences of using cannabis. Like other psychoactive substances, cannabis can lead to dependence and addiction. The primary psychoactive compound in cannabis, delta-9-tetrahydrocannabinol (THC), is responsible for the "high" feeling that people experience after using cannabis (Bonn-Miller et al., 2014).

3.4.1. Patterns of Cannabis Use

Cannabis use patterns vary depending on the legality of cannabis use in each region. While cannabis is still an illicit substance in many countries, an increasing number of countries have discussed legalising cannabis use, making it easier for users to obtain cannabis through dispensaries (Haug et al., 2017). Cannabis cultivation policies also allow the supply of cannabis within the community and the linkage with developed cannabis networks (Belackova et al., 2019; Haug et al., 2017). The ease of obtaining cannabis encourages people to incorporate it into their daily use.

Young people obtain cannabis through social events, such as music festivals and dance events, where some may readily initiate cannabis use through social facilitation (Baumeister & Tossmann, 2005; Noack et al., 2011b). Cannabis is often perceived to have lower health risks than other substances, leading some to believe that cannabis has fewer adverse side effects, better symptom management, and less withdrawal potential (Haug et al., 2017; Reiman, 2009). These beliefs further fuel the public acceptance of cannabis use and encourage people to treat it as essential for entertainment.

Apart from recreational propose, people use cannabis for a myriad of reasons, such as

alleviating chronic pain, muscle spasms, headaches, insomnia, and stimulating appetite, or achieving psychological comfort by relieving boredom, anxiety, and stress (Bonn-Miller et al., 2014; Haug et al., 2017; Lee et al., 2009; Nunberg et al., 2011). A survey conducted by Rotermann and Pagé (2018) highlights that over half of the respondents who self-medicate through cannabis use it to alleviate pain as their primary goal. Others self-medicate with cannabis to cope with mental health issues, such as anxiety, depression or nervousness, and insomnia (Rotermann & Pagé, 2018). Almost half of the self-defined medical cannabis users with a high frequency of cannabis use reported daily or near-daily use. They consider cannabis as an effective pain analgesic or mental health alleviator. Regarding those self-defined medical cannabis users who report poor physical or mental health, daily cigarette smokers or heavy drinkers, cannabis is viewed as a viable alternative to traditional pain medications or mental health treatments (Rotermann & Pagé, 2018).

Nevertheless, the use of cannabis is not always beneficial. Bonn-Miller et al. (2014) found that medical cannabis users with muscle spasms and nausea were more likely to develop cannabis dependence, while medical cannabis users with depression were most likely to abuse cannabis (Bonn-Miller et al., 2014). Crippa et al. (2009) found that long-term, regular, and habitual cannabis use may reduce anxiety, but high doses can cause intense fear, anxiety, panic, and phobic attacks. Additionally, cannabis use can increase risky and problematic behaviours, particularly when combined with anxiety symptoms, leading to risky and suicidal behaviours (Innamorati et al., 2008). Hence, cannabis use does not necessarily alleviate psychological problems but may even exacerbate them.

The problems associated with cannabis use must be considered, as cannabis users are often accompanied by or concurrent with using other substances, particularly persistent, dependent, and abusive cannabis users (Bonn-Miller et al., 2014; Perkonigg et al., 1999). After cannabis use, cigarette and alcohol use are common (Reinarman et al., 2011; Reiman, 2009). For example, the survey revealed that more than 20% of reported daily cigarette smokers use cannabis for medical purposes, which is 2.5 times greater than the proportion seen of non-daily smokers (Rotermann & Pagé, 2018). The survey also found that 47.2% of self-defined medical cannabis users consume cannabis daily or close to daily, while 35.5% reported using cannabis weekly (Rotermann & Pagé, 2018). It is relatively common for cannabis users to use smoking joints as the inhalation method of cannabis, often combined with cigarette smoking (Noack et al., 2011b). Adolescents and young adults often use a "water pipe" or "smoking a pail" for

excessive cannabis use (Noack et al., 2011b). Besides, cannabis use is also linked to increased binge drinking among young adults aged 21 or above (Wen et al., 2015). Furthermore, cannabis use is associated with the help of other dangerous substances, including hallucinogens, cocaine, inhalants, MDMA, Vicodin, sedatives, opiates, and stimulants (e.g., ecstasy) (Bonn-Miller et al., 2014; Perkonigg et al., 1999; Reiman, 2009).

By and large, the patterns of cannabis use are influenced by various factors. The legality of cannabis use, ease of access, and social facilitation can reinforce the use of cannabis among young people for recreational purposes. Legal dispensaries or community networks perceived medical functions and lower health risks also contribute to increased cannabis consumption. Since cannabis use is often accompanied by other substances, this further increases risky and problematic behaviours from cannabis use. Hence, it is essential to consider these factors when developing policies and interventions to ensure the safe use of cannabis.

3.4.2. Characteristics of Cannabis Use

In Western nations, adolescence is the riskiest period for initiating the use of cannabis, particularly between the ages of 14 and 17 (Baumeister & Tossmann, 2005; Chen & Kandel, 1995; Price et al., 2001). The risk of first cannabis use increases sharply from the age of 13 (Baumeister & Tossmann, 2005) and remains a steady increase after 14 years old (Perkonigg et al., 1999). An abusive or addictive household will further increase the risk of cannabis use (Reiman, 2009). Cannabis use is considered an adolescent-limited deviant behaviour because a significant reduction or cessation of use after the late 20s is observed (Chen & Kandel, 1995; Price et al., 2001). However, some users continue cannabis use after adolescence. Most persistent users are found to be aged 25 to 44 and well-educated with stable employment (Nunberg et al., 2011). Prolonged cannabis use after adolescence also increases the risk of using other illicit substances in the early 30s (Baumeister & Tossmann, 2005).

An early study found no gender differences in cannabis users (Perkonigg et al., 1999), but later investigations validated the male domination among cannabis users (Hemsing & Greaves, 2020; Nunberg et al., 2011). Different patterns of cannabis use between males and females have also been identified. Women use cannabis mainly for handling insomnia and alleviating psychological discomforts, such as anxiety, depression, tension, and stress (Hemsing & Greaves, 2020; Noack et al., 2011a). Smoking with joints is typical for female cannabis users (Noack et al., 2011a). In contrast, male cannabis users are more likely to smoke with pipes, implying that an excessive amount is used at a time (Noack et al., 2011b). Higher

rates and frequency of cannabis use are also identified among male and young cannabis users (Hemsing & Greaves, 2020). In addition, high-potency products and cannabis concentrates are more prevalent among male users (Hemsing & Greaves, 2020). Male users use cannabis more frequently than females while being with friends, strangers, and alone. However, the gender differences are now narrowing, given that the high prevalence of cannabis use is also identified among the gender-diverse population (Hemsing & Greaves, 2020). Hence, the gender gap is less likely to be a factor determining the pattern of cannabis use in the future.

3.4.3. Consequences of Cannabis Use

Therapeutic benefits and alleviation of poor health conditions, like attenuating insomnia and suicidal ideation/behaviours, are the standard justification for cannabis users to persist in using the drug (Bonn-Miller et al., 2014; Reinarman et al., 2011). However, a certain degree of the cannabis effect can be placebo or subjective effects. Metrik et al. (2009) commented on the existence of stimulus expectancy (on the substance) and outcome expectancies (on effects or consequences after using the substance) inducing potential placebo effects among cannabis users. The placebo effects are more observable with fewer doses (Metrik et al., 2009). Given the existing placebo and subjective effects on cannabis use, medical purposes cannot provide a solid standpoint to justify the use of cannabis.

Research has demonstrated that continuous cannabis use can lead to dependence, a prevalent phenomenon concerning cognitive impairments (Budney & Moore, 2002). The Diagnostic Manual of Mental Disorders, fourth edition (DSM-IV) and the ICD-10 have classified cannabis dependence as a psychiatric disorder, like other substance dependence disorders (Budney & Moore, 2002). Cannabis use is considered problematic when the user experiences behavioural, cognitive, and physical symptoms after cannabis use yet continues using it regularly (Budney & Moore, 2002). Recent research suggests that the potency of cannabis consumed can influence dependence's severity. Freeman and Winstock (2015) conducted a survey in the United Kingdom, profiling different cannabis types available in the market and examining the correlation between participants' drug use patterns and the type of cannabis consumed. They found that the frequency of cannabis use was predictive of the severity of participants' dependence, particularly on participants who consume skunk, a highly potent variant of cannabis. The researchers concluded that the greater the potency of cannabis consumed, the more severe users' dependence on cannabis is (Freeman & Winstock, 2015). The skunk variant is also found to produce more potent cognitive impairing effects than other

cannabis variants, which aligns with the definition of cannabis dependence in the diagnostic manuals.

Cannabis dependence, like other substance use dependence disorders, can have harmful ramifications, especially on adolescent development. The maturation of cerebral areas of the brain is an essential part of adolescent development. Animal models have demonstrated that excessive cannabis use during adolescence can cause long-term changes in brain circuits, contributing to modified emotional and cognitive behaviours in adulthood (Rubino & Parolaro, 2008). It is even argued that vulnerable adolescents who experience cannabis dependence can face severe behavioural disturbances like schizophrenia (Rubino & Parolaro, 2008). Although less than half of daily cannabis users meet the threshold for cannabis dependence outlined in the DSM-IV, dependence is still a concerning issue due to its consequential impact on one's life (Looby & Earleywine, 2007). Looby and Earleywine (2007) conducted a survey investigating respondents' cannabis use and various aspects of their lives. Participants who met the criteria for cannabis dependence were found to experience lower levels of motivation, life satisfaction, and happiness compared to daily cannabis users who did not meet the criteria for dependence. Cannabis-dependent users also exhibited higher levels of depression than their counterparts. Also, frequent cannabis use became apparent to be associated with respiratory problems, even when the influence of tobacco smoking was accounted for (Looby & Earleywine, 2007). This highlights that cannabis dependence can be detrimental not only to users' physical health but also to their mental well-being.

Besides, research has depicted that adolescents have a notably higher risk of cannabis dependence when they rely on cannabis to cope with negative emotions (Fox et al., 2011; Haug et al., 2017; Mitchell et al., 2007). When users begin to use cannabis, they are less likely to use it for once only. The onset of cannabis use often results in considerable persistence in drug use (Perkonigg et al., 1999). The early onset of cannabis use predicts heavy and problematic cannabis use in young people, even with medical prescriptions (Baumeister & Tossmann, 2005; Haug et al., 2017).

Furthermore, using cannabis with a medical prescription cannot guarantee health-related cannabis use without other behavioural outcomes. Reiman (2009) found that medical cannabis users have more drinking problems than nonmedical cannabis users and the general public. Haug et al. (2017) also found that more medical and psychological problems are reported among medical cannabis users. Additionally, Reinarman et al. (2011) revealed that some

patients with a medical prescription did not follow the prescription to use cannabis, giving rise to unfavourable behavioural outcomes.

Despite the growing acceptance of cannabis use, there remains ongoing debate and controversy surrounding the drug. While some experts have raised concerns about the potential adverse consequences of widespread cannabis use, particularly among young people, some point to the potential medical benefits of the drug (Volkow et al., 2016).

12.   Drug Dealing and Trafficking

Considering the timeframe covered in the review (2000 to 2020), it is important to acknowledge that certain aspects of the content may reflect historical findings rather than directly addressing the current situation. However, these historical perspectives provided valuable insights into past drug dealing practices and the evolution of the current drug trends. Furthermore, this historical context establishes a crucial foundation for subsequent analysis and understanding of the subject matter and meaningful conclusions.

Street-level drug dealing is a widespread and conventional method employed by dealers (Broadhurst & Lee, 2009), as drug trafficking is often carried out covertly, with measures taken to avoid detection, arrest, and punishment at every stage (Ribeiro et al., 2010; Vidal & Décary-Hétu, 2018; Sytsma & Piza, 2018). Despite the exponential growth of online drug trafficking and the evolution of drug markets, face-to-face drug transactions are still predominant on the retail level (May & Hough, 2004; Coomber, 2015; Barratt & Aldridge, 2016).

As the illegal drug economy has flourished over the years, drug trafficking has become increasingly complicated or even saturated. A case study into the drug markets in a London borough conducted by Hales and Hobbs (2009) explored how a single borough's economy expanded to the level it is currently operating. Interviews with police drug squads revealed that the drug economy in the London borough operates "24/7". These illegal markets resemble the regular practices of legal businesses by conducting risk management and penetrating new markets when opportunities arise to remain competitive (Hales & Hobbs, 2009). Each market is organised in unique configurations to target specific buyers and sellers. The most prevalent market configurations were drug dealing on housing estates and at particular locations, revealing that the current borough's drug market is closed rather than open. Much of these drug dealings were operated by gangs who recruit youths through intimidation to take part in their drug dealing business on the retail level (Hales & Hobbs, 2009). This unveils that drug dealers' treatment of their drug trafficking business as legitimate enables their operations to flourish into a sophisticated organisation.

Coomber and Moyle (2017) further explored the growth of street-level drug trafficking and the expansion of the drug supply model. Previous studies showed that street-level drug trafficking is not constant at the national level, but rather, some cities act as hubs for drug supply at the regional level (National Crime Agency, 2016; Pearson et al., 2001). Through a mixed-

methods approach, the researchers found that drug dealers have been adopting outreach methods of business practice – commuting drug dealing, where they travel outside their 'county lines' to reach new markets and retail there (Coomber & Moyle, 2017). Commuting drug dealing allows drug traffickers to expand their business by moving outside of the inner-city markets that are saturated with other drug traffickers (Coomber & Moyle, 2017). By constantly moving their retail around, anonymity is also provided for drug traffickers (Coomber & Moyle, 2017). In provincial areas, drug dealers often target vulnerable populations and recruit them as 'drug runners' to sustain the supply operations (Coomber & Moyle, 2017). A similar practice is also utilised in Canada (Butera, 2013). Coomber and Moyle (2017) identified that such a drug supply model requires traffickers to prioritise manipulating vulnerable populations to accumulate human capital in provincial territories over the convenience of inner-city drug markets. The development of the new drug supply model demonstrates the adaptability of drug trafficking. Although online drug trafficking through social media and the dark web is becoming ever more prominent, street-level drug trafficking has been evolving to benefit drug dealers.

12.1. Drug Dealing Practices

Several practices of drug trafficking will be summed up and presented in the following parts:

4.1.1. Camouflage

Drug dealers camouflage their activities by engaging in legal occupations or businesses, which create unpredictable routines that make it harder for law enforcement authorities to track them (Fader, 2016; Fader, 2019). Gender also plays a role in camouflage, where drug dealers use gender advantages to avoid drawing suspicion from the police (Carbone-Lopez, 2015; Fleetwood, 2014; Moloney et al., 2015). Additionally, they tend to commit crimes in safe locations, such as public areas like parks, alleys, and parking lots, with less police presence to blend in with the local population (Carbone-Lopez, 2015; Olaghere & Lum, 2018). Transactions also occur at local entertainment facilities like restaurants or markets, where participants can blend in with others and avoid attracting attention (Jacobs & Miller, 1998; Bernasco & Jacques, 2015). These areas provide easy access to potential buyers, as they are often located near public transportation hubs and other public places. Dealers strategically select spots, such as Methadone Centers, side streets, and bus stops, where they are more likely to attract potential clients (Bernasco & Jacques, 2015; Chan et al., 2020; Chen et al., 2020).

4.1.2. Trust

Trust is crucial in covert transactions where the buyer and seller must cooperate silently. On the one hand, clients tend to form a direct connection with dealers as acquaintances often get a lower price of drugs (Chan et al., 2020). On the other hand, drug dealers prefer dealing with regular customers to avoid the risk. Still, there are times when they have to deal with new buyers they may not trust. To avoid getting caught by the police, they develop tactics to determine the buyers' identity without arrest. First, they avoid dealing with immature individuals who might be under intensive police surveillance. They assess one's maturity based on age stereotypes or risky behaviour such as drug overdose (Jacques et al., 2014). They can also differentiate between the police and real drug customers based on physical appearance and verbal cues or by testing potential buyers in various ways (Jacques & Reynald, 2012). They scrutinise their counterparts repeatedly and collectively to ensure their real identity. In case of potential danger or unusual risk, dealers use a "peep game" (Jacobs, 1996) to identify their territory, such as using a foreign language to separate genuine drug buyers from undercover police officers (Knowles, 1999). Once they spot an undercover police officer, drug dealers refrain from exchanging drugs (Jacques et al., 2014). The trust between sellers and buyers also lowers the violence level when a debt exists (Dickinson, 2020).

Drug dealing groups usually have multiple members with various roles (Fader, 2016). Some are responsible for money transactions, while others handle drug delivery (Johnson & Natarajan, 1995; Van Nostrand & Tewksbury, 1999). Lower-level distributors are often hired for the riskiest work (Cross, 2000; Johnson & Natarajan, 1995; Jacobs & Miller, 1998). Drug runners protect actual dealers from potential police surveillance or detention, allowing them to evade the criminal justice system entirely (Knowles, 1999). The "big boss" who owns the drugs and money never shows up during the drug dealing, minimising their criminal liability during police observations. Risk transfer is a method of diverting dangers to lower-level gang members. Piza and Sytsma (2016) stated that selling partners are also used as a defence against severe charges. While some drug transactions occur in public areas, some occur in isolated areas where drug dealers can easily spot any potential danger. These dealers often direct their buyers to enter hidden areas within apartments so that their partners can closely monitor the buyers' actions in case of danger (Jacobs, 1996).

4.1.3. Stashing

Unlike high-level drug dealers with many assistants, street drug dealers have to hide their

drugs in safe locations to minimise the risk of being accused of drug trafficking, which carries a more severe penalty than drug possession. To achieve this, they frequently hide most of their stock and only keep small amounts of drugs for a quick sale, according to Johnson and Natarajan (1995). Familiar hiding places include caps, under bottles, newspaper stands on the ground, or paper bags placed at specific angles, as Jacobs (1996) noted. Jacobs & Miller (1998) also stated that women often develop innovative hiding spots in their homes, such as a stash inside the hollow shaft of a curtain rod or a box under the carpet where their pet dog sleeps. Dealers must practice drug-handling techniques to avoid scrutiny when encountering the police. Since the police have no right to ask suspects to strip, drugs can be hidden inside their clothes. Therefore, dealers typically package drugs in plastic wrap tightly and conceal them in their hands or mouths unseen or even swallow them, if necessary (Jacobs, 1996). Specifically, women's bodies are often seen as an advantage in drug dealing since they have "more hiding spots", according to Moloney et al. (2015). The choice between an on-person or off-person stash also depends on the setting. In commercial areas with high foot traffic, an on-person stash is considered safer than an off-person stash (Piza & Sytsma, 2016).

4.1.4. Displacement

Despite police efforts to curtail drug activities, drug abusers view these measures as temporary, and drug markets eventually return to normal functioning shortly (Aitken et al., 2002). Drug abusers and dealers have become proficient at adapting their practices to avoid police attention in response to crackdowns on drug markets (Aitken et al., 2002). Utilising a "grapevine-like" communication network, drug abusers quickly become aware of police presence and shift street drug markets to unmonitored areas, allowing drug abuse to continue uninterrupted (Aitken et al., 2002). Modern technology, particularly mobile phones, has made it effortless for drug dealers to conduct their business and less susceptible to police intervention (Aitken et al., 2002). This has led to the spread of drug abuse to neighbouring urban areas and even the online sphere, resulting in the underreporting of drug abuse statistics. While police efforts have successfully curbed drug activity in visible areas, the resilience and adaptability of the drug community have made the once-visible drug abuse issue invisible to officials.

When authorities crack down on open drug markets, drug-related crimes are displaced, and drug abusers are adversely impacted, according to a study by Kerr et al. (2005). In response to the enforcement of drug market laws, drug abusers tend to seek out hidden and non-public locations to continue drug abuse (Kerr et al., 2005). Furthermore, Kerr et al. (2005) highlight

the prevalence of covert drug abuse in the United States. "Shooting galleries" are hidden indoor spaces where drug-taking behaviours flourish. Many drug abusers look for these places because they fear arrest if they continue to abuse drugs overtly (Kerr et al., 2005). This finding is supported by a study conducted by Lam et al. (2004), which revealed how Hong Kong youths are drawn to underground rave culture and engage in risky behaviours, as there is little risk of arrest.

When the police crackdown on street-level drug markets, these markets move to neighbouring metropolitan areas (Wood et al., 2004). However, researchers have questioned whether crime displacement would also occur in cyberspace. Ladegaard (2019) examined the effect of law enforcement's mandatory shutdown of online drug markets by comparing the business activity of the markets before and after the shutdown. It was found that the arrest of a prominent MDMA online vendor, HollandOnline, led to a reduction in MDMA online trade in the Netherlands, as evidenced by the drop in overall revenue for all Dutch and Europe MDMA online vendors (Ladegaard, 2019). However, further analysis revealed that the upcoming Christmas season had an independent effect on the decline in MDMA trade online, suggesting that the arrest of HollandOnline had little influence on trade (Ladegaard, 2019). When Ladegaard (2019) examined individual MDMA vendors, it was discovered that while some vendors experienced a dip in sales following the arrest, HollandOnline's main competitors underwent a jump in sales. This indicates that although the arrest of a prominent online MDMA vendor had a moderate deterrence effect on online drug trafficking, ultimately, HollandOnline's absence from the market was replaced by other competitors – those who encountered prospering sales despite law enforcement interference in the Dutch MDMA online market. From this, we can see that the arrest of online drug vendors reshapes the structure of the digital drug trade and redirects sales to other drug vendors, revealing that police deterrence efforts in the online sphere are as transient as in real life.

Ladegaard's (2017) study supports that law enforcement authorities' attempts to deter drug trafficking on digital markets are fleeting. The study explored whether media coverage of the arrest of online drug vendors affects the drug market operations. By examining the trading activities of two cryptomarkets and media articles, Ladegaard (2017) discovered a positive correlation between media coverage and online drug trading activities. The constant news coverage of the court proceedings involving a prominent cryptomarket founder has increased drug trafficking in cyberspace. Although Ladegaard (2017) acknowledged that external factors

may have influenced the boost in sales, a positive relationship indicates that police deterrence efforts in digital drug markets are less effective than expected. Ladegaard (2017) also noted that neither of the significant stages of the court proceedings had a deterrent effect on the key players in the digital drug markets. Despite media coverage focusing on law enforcement's efforts to prosecute the founder, the publicity failed to aggravate the risk of digital drug trafficking and did little to mitigate the drug trade problem.

12.2. Drug Dealing and Trafficking in Hong Kong

Drug trafficking in Hong Kong is a clandestine and intricate operation rife with covert and disguised activities to evade detection by law enforcement. In the initial phase of smuggling drugs into Hong Kong, there are five stages of heroin trafficking (Laidler et al., 2000). Each step takes precautionary measures to reduce the potential risk of police interception. For instance, traffickers use multiple mobile phone SIM cards when communicating with other parties (So, 2011). Brokers and investors keep a distance from drug handling to avoid getting caught. Various methods are employed for smuggling drugs into Hong Kong. First, heroin can be smuggled by truck drivers and on-foot traffickers through the Shenzen-Lo Wu crossing, exploiting numerous travellers and truckers at the border to evade customs officials' detection (So, 2011). Besides, cannabis is typically smuggled into Hong Kong by passengers concealing small quantities of the drug on their bodies or in their luggage from Thailand, Cambodia, or the Golden Triangle, while some cannabis is smuggled by ship (So, 2011). According to So (2011), most of the ecstasy and ketamine consumed locally in Hong Kong are manufactured in the Mainland and smuggled into the city via sea or across the border by couriers. Couriers are usually aged between 19 and 40, with lower socioeconomic backgrounds or unemployed. Some may be drug abusers or indebted to loan sharks, while some may be truck drivers recruited as couriers (So, 2011).

The drug trafficking process in Hong Kong has evolved over the years. From 1970s to the early 2000s, significant amount of drug dealers purchased drugs from the Mainland at a lower price to perform drug dealing activities in Hong Kong (Broadhurst & Lee, 2009). Similar to practices in other countries, drug dealers in Hong Kong in the past often bribed government officials or personnel to secure and facilitate their operations (So, 2011; Tzvetkova et al., 2014). The Hong Kong triad society has formed partnerships with political leaders and business organisations to sustain their influence and ensure the smooth operation of drug dealing (So, 2011). In the early 2000s, Asia-Pacific nations, such as China, Cambodia, and the Philippines,

were regarded as the primary producers of methamphetamines and cannabis in Hong Kong (Reid et al., 2006). Drug dealers smuggle these drugs through vulnerable points along international borders from one country to another (Reid et al., 2006). Chinese drug dealers in Hong Kong typically operate on a small scale without a rigid organisational hierarchy (Li & Liu, 2017). Chen et al. (2020) found that drug dealing was more prevalent among the urban villages and the floating population.

Street-level drug distribution operates in various ways, from user-dealers selling small quantities of drugs to a circle of friends to large retail groups employing several couriers (So, 2011). User-dealers purchase small quantities of drugs from a big dealer and sell them to a small number of known customers. These dealers may or may not be triad members, as their business typically involves only a few known customers (So, 2011). On the contrary, large retail groups are usually run by local triad bosses (So, 2011). These groups use rented premises as packing centres to divide the drugs into packets. The core group members are commonly loyal followers or relatives of the local triad boss, while packing workers or lookouts may not necessarily be the boss's followers but must somehow connect to the triad boss. For instance, they may be followers of the triad boss's "Lo Biu" (triad cousins). The drugs are usually delivered to customers by couriers, which can be triad members, drug abusers, people who owe money to the triad, or even school children (Chu, 2000, p.85).

The drug distribution process in Hong Kong generally involves ad hoc arrangements (So, 2011). Once drug dealers receive an order, they decide on the delivery method. A common tactic is the "drop system", in which dealers leave the drugs at secret locations and only reveal the areas to customers upon receipt of payment (Chu, 2000). This tactic is often used for heroin transactions purchased in public. In contrast, ice dealers typically go to the customer's apartment for a private purchase (Laidler et al., 2000).

4.2.1. Patterns and Characteristics of Drug Dealing

User-dealer is a common phenomenon in the drug market, where drug abusers sell drugs to support financial difficulties caused by substance use (Deuchar, 2018; Robinson et al., 2019; Small et al., 2013; So, 2011). Recent research has indicated that drug distribution is closely linked to social networks (Bouchard & Nguyen, 2010; Coomber, 2010; Coomber & Turnbull, 2007; Kandel & Davies, 2006), particularly in the cannabis market (Osborne & Fogel, 2008). Nevertheless, retail-level distribution between friends for non-commercial purposes is also commonly observed at the bottom end of the drug market (Pearson & Hobbs, 2001; Potter,

2009).

Overseas research suggested that drug dealing resulted from poverty, a response to state inaction to handle poverty and hopelessness among young people (Vo, 2018). Thus, drug dealing cases are often found in socially disorganised areas (Chen et al., 2020). Different types of dealers have been identified, including corporate sales, freelance or independent sales, and opportunistic sales (Small et al., 2013). Most dealers work as individual entrepreneurs or under the control of gangs (Lo, 2012; Kwok & Lo, 2013; Robinson et al., 2019). Street-level drug dealing has been a typical and traditional practice among dealers (Broadhurst & Lee, 2009). The dealing activities tend to be small-scale, localised, and dispersed in various spots (Chan et al., 2020). Dealers choose areas with a high success rate of soliciting clients, such as the Methadone Centres, branch roads, and bus stops (Bernasco & Jacques, 2015; Chan et al., 2020; Chen et al., 2020). Clients are also inclined to form a direct connection with dealers as acquaintances often get a lower price of drugs (Chan et al., 2020).

Membership in a gang also increases the likelihood of involvement in drug dealing (Robinson et al., 2019). However, research suggests that drug dealers under gang control can also experience exploitation by the gang itself (Small et al., 2013). This is particularly true for young gang members. Senior gang members often exploit their younger counterparts (Lo, 2012) as sacrificial lambs to avoid criminal liability, considering that young individuals might receive more lenient punishments (Kwok & Lo, 2013).

Research has depicted that deviant family and friends are facilitators of an individual's involvement in drug dealing (Friedman et al., 2003; Tzvetkova et al., 2014). However, male and female dealers are influenced by their peers in utterly different ways. Male dealers experience more encouragement from their peers to initiate the dealing, while female dealers are more likely to be influenced by whether their peers will approve of the trade (Friedman et al., 2003). Parker (2000, p.28) noted that these transactions are often perceived as an act of friendship and trust, highlighting the intrinsic connection between social supply and friendship in the drug market. Even when drug abusers transform into dealers, social supply remains essential to their relationships with suppliers and customers (Taylor & Potter, 2013). Additionally, early traumatic events, such as sexual and physical abuse, are found to be associated with female involvement in drug dealing (Friedman et al., 2003).

4.2.2. Consequences of Drug Dealing

Aside from the apparent penalties implemented by the official authority, the legal system and law enforcement, drug dealing imposes social consequences. Research indicates that drug dealers often face fierce competition and are prone to instigating drug wars while pursuing business opportunities (Robinson et al., 2019). Seffrin and Domahidi (2014) pointed out that violence and risky behaviours, such as carrying weapons, may intensify because of drug dealing. Vo (2018) identifies three primary adverse consequences of drug dealing on a community: "violence, undermining youth development, and impeding legitimate businesses" (p. 64). Similar detrimental impacts on youth development have been observed in Hong Kong (So, 2011).

Technological advances in drug dealing, such as smartphones, have made many people unaware of the seriousness of the offence (Demant et al., 2019), which increases the risk of arrest (Small et al., 2013). Youth and drug abusers are attracted to become user-dealers and sell drugs to peers for their convenience. However, these drug abusers engaged in social supply often do not perceive themselves as real drug dealers and are unaware of the associated risks (Jacinto et al., 2008). Even accidental involvement in drug dealing can increase the level of delinquency among peers (Seffrin & Domahidi, 2014), potentially leading them to become full-fledged drug dealers. The impact of drug dealing is not restricted to the dealer alone but also affects the people associated with the dealer. The social consequences are complex and challenging to measure. For example, Robinson et al. (2019) suggest that drug dealers inevitably encounter rivals and quickly initiate drug wars to pursue profit.

Furthermore, drug dealing is a more user-friendly way of distribution, requiring more customer service from the dealers (Chan et al., 2020), giving rise to poly-drug dealers who sell multiple types of drugs to ensure product diversification (Hughes et al., 2017). More customer-oriented drug dealers offering additional services emerge with the rising trend of online drug dealing (Chan et al., 2020). However, poly-drug dealers, who are involved in more serious crimes, face more severe sanctions than mono-drug dealers (Hughes et al., 2016). In addition to criminal justice system sanctions, drug dealers expose themselves to other hazards, such as drug debts and violence from market competition (Robinson et al., 2019; Seffrin & Domahidi, 2014; Small et al., 2013). Some suppliers offer bogus drugs to dealers, causing disputes, loss, and even robbery (Small et al., 2013). However, they must keep silent after experiencing victimisation (Small et al., 2013).

On the contrary, drug dealing in certain regions has occasionally positively impacted

communities, albeit temporarily. Wainwright (2016) explains that drug cartels, operating as drug trafficking organisations, exploit power vacuums or weaknesses in certain communities and provide limited public services to enhance their reputation. Vo (2018) found that residents in Costa Rica received benefits from drug cartels, such as the construction of sidewalks, contributions to infrastructure, donations of equipment to schools, and provision of social assistance. Additionally, drug cartels establish legal businesses within the community, which creates job opportunities for local people (Vo, 2018). The social status and psychological well-being of dealers, specifically female drug dealers, have been shown to improve as a result (Grundetjern & Miller, 2019). However, it is important to note that these positive outcomes are solely driven by monetary motives to ensure the effective implementation of clandestine agreements between enterprises (Wainwright, 2016).

In addressing this form of operation, the focus should not solely be on enhancing rehabilitation services but rather on improving the governance in dysfunctional domains. The implication lands on the comprehensive understanding of the long-term detrimental effects they have on communities and individuals. Recognising the exploitative nature of drug trafficking organisations is essential in addressing the underlying issues and working towards sustainable solutions, particularly regarding violence and youth development.

13.   Online Drug Dealing

The drug market has been adapting to technological advancements, with an increasing trend towards using smartphones and applications for drug trafficking (Demant et al., 2019; Dolliver et al., 2018; Lavorgna, 2014; Tam et al., 2018). Although most drug dealings are performed face-to-face or offline, online drug dealing with a delivery service to customers' homes has become a new trend (Chan et al., 2020; Dolliver et al., 2018). The Internet has provided a platform for communication and anonymous online transactions between drug buyers and sellers, which boosts drug-related activities on social media platforms (Chan et al., 2020; Demant et al., 2019; Sullivan & Voce, 2020). Convenience was considered the primary reason for using technology to facilitate drug trafficking, followed by anonymity and ease of connecting with others (Moyle et al., 2019). These findings depict that technology for drug trafficking is widespread, proving that the drug market is adaptable in its business practices to evade police detection.

13.1. Use of Social Media Apps and Mobile Phones

Technological advancements have prompted drug trafficking to expand into the online sphere, allowing transactions to be completed more conveniently and outside the attention of law enforcement officials (Sullivan & Voce, 2020). Based on data from the Drug Use Monitoring in Australia program, Sullivan and Voce (2020) interviewed police detainees about how technology is used to facilitate drug trafficking. Many detainees who engaged in drug-related activities through mobile communication used their phones and apps to purchase drugs, and almost half of them used their phones to sell drugs (Chan et al., 2020; Demant et al., 2019). Additionally, some detainees confessed to using phones to communicate with other sellers and buyers about the presence of police enforcement (Sullivan & Voce, 2020). Messaging applications, text messaging, and telephone calls were commonly used for drug-related communication. Individuals who relied more on messaging applications were in their late twenties, while those who relied more on phone-based communication were in their mid-thirties.

Researchers began exploring how social media applications impact drug market demand and supply chains. Moyle et al. (2019) conducted a survey and interviews to investigate how drug suppliers and buyers adopt online apps for drug transactions. Supporting the findings of Sullivan and Voce (2020), Moyle et al. (2019) found that convenience in organising a trade was the most cited advantage of sourcing drugs online, followed by speed. The familiar interface of

popular apps enables a swift transaction with minimal effort. Buyers and sellers can harness their understanding of such apps from daily use to build a market for illicit drugs. Respondents also highlighted the security of social media apps, which provides encrypted data and transient messaging. Nonetheless, some expressed concerns about their anonymity, which could conceal undercover law enforcement officers (Moyle et al., 2019). This concern was a commonly cited reason why some buyers and sellers are hesitant about online drug markets, demonstrating that drug trafficking online is a double-edged sword to be wary about.

Urbanik and Haggarty (2018) examined how drug traffickers navigate their business and mitigate the risks of drug dealing on social media through interviews and ethnographic observations. It appears to be common among younger gang members to show off their gangster lifestyle on social media. Yet, older gang members disapprove of this habit as it could lessen their ability to conceal criminal activities. Social media could also unintentionally reveal intelligence about rival gang groups to unwanted audiences and assist police with their crackdowns (Urbanik & Haggarty, 2018). To counter this downside of social media use, drug dealers often adopt an online persona distinct from their personality (Urbanik & Haggarty, 2018). This allows them to keep their criminal activities detached from their personal lives and mitigate the risk of police interference. Some drug dealers would never post photos of themselves on their pages but allow their images to appear on other people's pages to create a sense of separation between identities (Urbanik & Haggarty, 2018). The achievement of estrangement between drug dealers' deviant selves and their usual selves safeguards their identity on risky social media platforms.

13.2. Use of the Internet and 'Cryptomarkets'

Cryptomarkets provide an e-commerce interface for buyers and sellers to trade illicit drugs online (Ball et al., 2019). Bertola (2020) found that such sites are very user-friendly and adopt a user experience similar to e-commerce sites like eBay or Amazon. This enables potential buyers and sellers to conduct transactions hassle-free.

By monitoring cryptomarkets in the Canadian context, Broséus et al. (2016) highlighted that although the monitored vendors were all based in Canada, they were willing to ship illicit drug products globally, demonstrating their capacity to handle worldwide shipping. Similarly, Rhumorbarbe et al. (2016) mentioned that Swiss vendors were unafraid of selling their drug products internationally even though they were at imminent risk of detection. Their inclination

to go beyond domestic borders is emphasised by their employment of different shipment concealment tactics to avoid detection by law enforcement (Broséus et al., 2016). The researchers noted that carefully thought-out packaging techniques could offset some risks of detection, such as storing drugs in conventional envelopes and packaging them together in a stealthy manner to maintain an air of professionalism (Rhumorbarbe et al., 2016). This proves that cryptomarkets allow drug traffickers access to a broader range of customers through the World Wide Web.

Broséus et al. (2016) also stated that while most vendors limit their drug listings to less than ten or even to a single market for one type of drug, some vendors have listings of about 100 or more. This infers that these vendors are critical actors in drug trafficking or part of a very sophisticated drug trafficking ring (Broséus et al., 2016). By analysing the usernames of different vendors, the researchers ascertained that vendor usernames are carefully curated as a business strategy to inform buyers of the business's reputation (Broséus et al., 2016). They hypothesised that identical or similar usernames hint at the same drug distribution network, which unveils the sophistication of the vendors' businesses. This revelation highlights the possible existence of a well-structured and organised Internet drug network, enabling efficient domestic and international sales of drug products.

Lavorgna (2014) employed case studies and interviews to examine the role of cyberspace in integrating drug markets and the internet. It was found that the internet provides multiple criminal opportunities for drug trafficking to thrive in cyberspace. First, the Internet offers communicative opportunities that facilitate communication between buyers and sellers through the online platform. Another outstanding opportunity is the informational opportunity that online drug trafficking provides. The ease with which rumours and misinformation can spread on social media makes it challenging to discern the reliability and credibility of information (Chie et al., 2015). The internet grants users access to valuable information, from legal to drug manufacturing information, which could help enhance drug traffickers' businesses. These criminal opportunities also shape the online drug markets, re-configuring how traditional drug markets are managed and organised.

However, the cryptomarket industry's operation, size, and scale are unclear and vary across districts. Cryptomarkets evolve and expand every moment, making it difficult to investigate and understand what steps should be taken to address these challenges and regulate online drug trafficking.

13.3. Police Deterrence Efforts and Displacement Effects

While law enforcement crackdowns on street-level drug markets may result in the displacement of these markets to neighbouring areas, it is still being determined whether similar crime displacement occurs in cyberspace (Wood et al., 2004). Ladegaard (2019) conducted a study to examine the impact of law enforcement interference on online drug markets by comparing the business activity of drug markets before and after law enforcement imposed a mandatory shutdown of the markets. Specifically, the study examined the effect of the arrest of a prominent online MDMA vendor, HollandOnline, on the overall revenue of Dutch and European MDMA online vendors. It is found that while there was a reduction in overall revenue after the arrest, this was likely due to the upcoming Christmas season rather than the arrest itself. However, further analysis of individual MDMA vendors showed that HollandOnline's main competitors experienced a jump in sales following the arrest, suggesting that the arrest had little long-term impact on the online drug trade. Upon examination of the individual MDMA vendors, Ladegaard (2019) found that while some vendors experienced a dip in sales following the arrest, HollandOnline's main competitors experienced a jump in sales. This implies that although the arrest of a prominent online MDMA vendor had a moderate deterrence effect on online drug trafficking, ultimately, HollandOnline's absence on the market was replaced by other competitors. These competitors underwent flourishing sales despite the law enforcement interference in the Dutch MDMA online market. This can be concluded that the arrest of online drug vendors reconfigures the structure of the digital drug trade and redirects the sales to other drug vendors, illustrating that police deterrence efforts in the online sphere are as transient as real life.

Supporting the finding that police deterrence efforts are temporary on digital drug markets, Ladegaard (2017) also examined whether media coverage of law enforcement interference and the arrest of online vendors in the drug market have remarkable impacts on online drug market operations. By monitoring the trade activities of two cryptomarkets and relevant media articles, Ladegaard (2017) found a positive correlation between media coverage and online drug trading activities. It appears that constant news coverage of the court proceedings of a prominent cryptomarket founder has led to increasing drug trafficking in cyberspace. Although Ladegaard (2017) is wary that external forces may influence the boost in sales, a positive relationship suggests that police deterrence efforts in digital drug markets are less effective than imagined. Additionally, Ladegaard (2017) points out that neither of the major

stages of the court proceedings of a cryptomarket founder has had a deterrence effect on the key actors of the digital drug markets. The researcher concludes that despite media coverage focusing on law enforcement's efforts to prosecute the founder, the publication of the event has failed to aggravate the risk of digital drug trafficking and did little to alleviate the drug trade.

Overall, these findings suggest that law enforcement efforts to regulate online drug markets are limited in effectiveness. Further research is needed to understand these markets' complex dynamics better and develop more effective strategies for addressing this issue.

13.4. Anonymity in Online Drug Purchasing

Traditional drug dealing involves face-to-face contact and relies on trust and personal acquaintance between dealers and clients for mutual protection, so transactions are typically limited to those who are known to each other (Chan et al., 2020; Childs et al., 2020; Tzanetakis et al., 2016). However, the anonymity and borderlessness of the cyber world have led to a transformation from traditional drug dealing to a new virtual dimension (Chie et al., 2015; Dolliver et al., 2018). Given that the online space's anonymity allows buyers and dealers to evade detection by law enforcement (Dolliver et al., 2018), the relationship between dealers and clients can be strangers, leading to an extension of the drug network and business.

In Urbanik and Haggarty's (2018) study, drug traffickers' use of social media was investigated through interviews and observations. It was found that while younger gangsters often flaunt their criminal activities on social media, older generations disapprove of this practice as it can reveal sensitive information to unwanted audiences, including law enforcement officials. Drug dealers often adopt a separate online persona from their true identity to mitigate this risk, enabling them to separate their criminal activities from their everyday lives. Some drug dealers even avoid posting images of themselves on their pages but allow their pictures to be posted on others' pages to create further separation between their online personas. This study depicts that separating one's deviant self from their usual self on social media can protect themselves in the dangerous world of online drug trafficking.

Covert information management is another feature that caters to the essential needs of drug abusers and dealers. These apps offer end-to-end encryption and self-destruct messaging functions, providing buyers anonymity, convenience, and a low risk of being wiretapped (Lavorgna, 2014; Liu & Bharadwaj, 2020). According to the research by Childs et al. (2020), drug abusers are generally hesitant to engage in drug dealing due to concerns about scams,

personal safety, and arrest. However, the anonymity offered by online drug markets has broadened the drug network and business. By providing anonymity in drug-related communication and transactions, buyers and sellers can remain unknown to each other about their personal identities or physical locations (Tzanetakis et al., 2016). Besides, hard-to-trace currency transactions, such as using cryptocurrencies like Bitcoin, have also substantially facilitated drug trafficking in online markets. With covert data handling, online markets are perceived as safer and more reliable than traditional offline markets (Bancroft & Reid, 2016; Barratt, 2012; Moylea et al., 2019; Hout & Bingham, 2013).

On online drug markets, dealers and buyers can enjoy guaranteed anonymity to avoid being detected by law enforcement (Dolliver et al., 2018). This offer drug buyers instant access to drug supply and safer ways to reach drug dealers (Liu & Bharadwaj, 2020). However, the anonymity provided by social media platforms is viewed as a double-edged sword. Buyers and sellers can hide under the guise of a false profile but are also at risk of undercover law enforcement officers. This concern was a typical reason for some buyers and sellers hesitating about online drug markets. Overall, using social media apps for drug trafficking is beneficial but, in the meanwhile, poses risks that need to be considered.

13.5. Convenience in Online Drug Purchasing

The advent of the Internet and modern technologies, including smartphone apps such as WhatsApp and Instagram, has opened up new channels for drug trafficking. Similarly, cryptomarkets provide an e-commerce platform for buyers and sellers to engage in the illicit drug trade on the Internet (Ball et al., 2019). These sites are user-friendly with a similar interface to online shopping platforms like eBay and Amazon, making it effortless for potential buyers and sellers to conduct transactions (Bertola, 2020).

Easy search for drug access is one critical feature of social media, attracting adolescents to acquire knowledge through online platforms (Chie et al., 2015). Studies by Bakken & Demant (2019), Coomber & Moyle (2017), and Moyle et al. (2019) highlight the various ways in which social media platforms and mobile apps, such as WhatsApp, Facebook and Instagram, have been utilised by drug dealers to facilitate drug sales. Using hashtags (i.e., "user-generated labels that enable the identification of content on a particular topic") and emojis (i.e., "small digital images or icons used to express an idea or emotion") (Ferguson, 2016; Moylea et al., 2019, p. 102), drug dealers can advertise their products and make them easily searchable by

potential buyers. For instance, symbols like "diamond" or "snowflake" can indicate the availability of cocaine (Moylea et al., 2019, p. 102). These social media platforms allow drug buyers to follow drug dealers' accounts, initiate direct contact, and further communicate using more secure messaging apps like Telegram.

Buyers can use location services built into messaging apps or hashtags to locate drug dealers and obtain their drugs via public meetings or home deliveries (Moyle et al., 2019). Drug clients consider not only the drug quality but also the convenience and speed of delivery (Søgaard et al., 2019). Moyle et al. (2019) found that convenience was the most cited advantage of sourcing drugs online. Besides, speed was highlighted as a substantial benefit due to the familiar interface of popular apps, enabling a quick and effortless transaction. Thus, online drug dealing with home delivery services has become a new trend (Chan et al., 2020; Dolliver et al., 2018).

Overall, the unique features of cyberspace provide a conducive environment for the emergence and sustainability of new patterns of drug dealing and trafficking.

13.6. Border-Free Drug Trafficking

The Internet's borderless nature makes it demanding for law enforcement to monitor and control the drug trade, contributing to the growth and fluctuation of the global drug market (Demant et al., 2019; Dolliver et al., 2018). This increases recreational drug use and reconfigured relationships between dealers, clients, and middlemen (Lavorgna, 2014). Vendors based in Canada on these platforms are willing to ship illicit drug products worldwide, demonstrating their capacity to handle international shipping (Broséus et al., 2016).

To avoid detection by law enforcement, these vendors use different concealment tactics for shipments (Broséus et al., 2016). A Swiss cryptomarket study (Rhumorbarbe et al., 2016) showed that vendors are unafraid of selling their drug products internationally, despite the increased risk of detection. These vendors utilise carefully thought-out packaging techniques to offset some risks of detection, such as storing the drugs in conventional envelopes and packaging them together professionally. Besides, Broséus et al.'s (2016) study discovered that online drug vendors carefully curate their usernames as a business strategy to inform buyers of their reputation. Similar usernames may indicate the same drug distribution network, which reveals the sophistication of the vendors' businesses. These findings point to well-structured and organised Internet drug networks that efficiently facilitate the domestic and international

sale of various drug products.

The emergence of the Internet and cyberspace has brought about changes in drug dealing patterns (Tzanetakis et al., 2016), implying that small-scale localised transactions may now emerge into large-scale borderless transactions throughout Hong Kong. Further research is needed to understand these markets' dynamics better and develop practical strategies for addressing this issue.

13.7. Drug Subculture in the Online Context

The Internet provides valuable information, including legal and drug manufacturing information, that could boost drug traffickers' businesses (Lavorgna, 2014). However, these opportunities have reshaped how traditional drug markets are managed and organised, contributing to the growth and fluctuation of the global drug market (Demant et al., 2019; Dolliver et al., 2018).

Social media platforms like YouTube, Twitter, and Instagram facilitate interactions and connections among young people (Ito et al., 2009). Such platforms enable the circulation of pro-drug use messages and information, including where to purchase drugs (Thanki & Frederick, 2016), as well as favourable opinions and new trends regarding marijuana use (Bandura & McClelland, 1977; Cavazos-Rehg et al., 2014; Cavazos-Rehg et al., 2015; Cavazos-Rehg et al., 2016; Fujimoto & Valente, 2012; Morgan et al., 2010). The abundance of drug-related information on the internet gradually shapes the ideas of drug use, given that many individuals do not proactively seek out information on this topic (Cheung et al., 2011; Chie et al., 2015). By continuously exposing young people to drug-related information and providing opportunities for them to interact with other drug abusers, drug abuse can be normalised and reinforced (Cavazos-Rehg et al., 2016; Hanson et al., 2013).

Peer pressure and social learning from drug-taking peers can also instigate drug abuse among young people (e.g., Allen et al., 2012; Cavazos-Rehg et al., 2016; Eisenberg et al., 2014). Peers considerably influence an individual's involvement in drug dealing (Friedman et al., 2003). Drug sellers may also use these peer networks to promote and advertise drugs to expand their businesses (Cavazos-Rehg et al., 2016). The social circles formed by drug buyers and sellers can be regarded as a subculture with pro-drug use norms (Holm et al., 2016) and distinctive language, which helps maintain secrecy and enhances in-group cohesion (Johnson et al., 2006, p. 46). The engagement and maintenance of online interactions between drug

buyers and sellers can give rise to an online drug subculture.

The subculture of drug abusers comprises not only pro-drug use norms (e.g., the belief that cannabis is socially acceptable and boosts creativity and innovation; Holm et al., 2016) but also distinctive language, including slang and argot, that helps maintain secrecy and enhance in-group cohesion (Johnson et al., 2006, p. 46). This language is used during drug-related communication, both online and offline, which serves to exclude outsiders and reinforce the subculture's norms and values. These interactions involve exchanging information about drugs, drug use, and drug-related experiences through social media platforms, websites, and discussion forums. The use of distinctive language and the reinforcement of pro-drug use norms create a sense of belonging and identity among members of the subculture. In this sense, an online drug subculture is formed by engaging and maintaining online interactions between drug buyers and sellers.

The internet is flooded with numerous pages, websites, and discussions continuously influencing the public's perceptions of cannabis use. Young people are more susceptible to drugs than adults, consuming an immense amount and higher frequency than in past generations (UNODC, 2024). Hence, intensive research is demanded to investigate the illegal market of cannabis, the consequences of cannabis use, and address the misperceptions of cannabis use, especially in the Internet context.

14.   Five Stages of the Drug Abuse Journey

To get rid of the drugs, Anglin et al. (1996) emphasised that successful drug recovery often required multiple treatment episodes due to the chronic and relapsing nature of drug dependence. Treatment should be viewed as a cyclic process of recovery with stages, such as treatment entry, relapse, and abstinence (Anglin et al., 1996), which also be named a "drug use career," "dependence career," or "addiction career" by researchers (Hser et al., 1997). Throughout the drug use career, users encounter multiple service systems, including treatments, correctional services, mental health, welfare, and primary health care, but may still require long-term care or management (Hser et al., 2007). Research findings showed that people with extensive histories of prior treatments demonstrated more dysfunction across multiple domains, including mental health, physical health, history of criminal behaviour, and social functioning (Anglin et al., 1996; Dennis et al., 2005). They also noted that most drug abusers did not seek help until they were deeply involved in drug use, highlighting the importance of considering the onset and persistence of drug use in understanding the drug journey.

Therefore, to fully understand drug addiction and recovery, the focus should not only be on treatment, relapse, and desistance but also on the factors that contribute to the onset and persistence of drug use. Incorporating multi-disciplinary understandings to develop a chronic framework is demanded to uncover the dynamics of the drug use journey (Hser et al., 2007). Our research team proposed that the process of drug abuse occurs on a continuum or cycle that includes (1) onset of drug use (social and psychological reasons), (2) persistence of substance abuse, (3) drug treatment, (4) relapse, and (5) desistance. However, some individuals may experiment with drug use and then desist without undergoing drug treatment or experiencing relapse (stages 3 and 4), moving directly to stage 5 (Hser et al., 2007). To account for this, the research team compensated for the prior investigations by including these earlier desisting populations in order to enrich the understanding by including all types of drug abusers.

The following sections review existing literature to further illustrate each stage with empirical evidence.

14.1. Stage 1: Onset of Drug Abuse

The earlier onset of drug use is one of the best predictors of future drug abuse and dependence (Hser et al., 2007). In the literature, various risk and protective factors are identified, but the most influential factors for initial drug use include peer pressure, drug availability and

an individual's social or family environment (Hser et al., 2007).

Social supply plays a significant role in the drug market and can lead to involvement in drug dealing, as discussed in the characteristics of drug dealing. In Australia, Scott et al. (2017) suggest that social supply is the best way to understand the distribution of cannabis. Researchers suggest shifting the sociological focus from markets to drug communities, emphasising the study of social organisation within these networks and its implications for social harm and well-being (Scott et al., 2017). Additionally, recent studies have found that once a recreational drug becomes widespread, it can form a new drug market, with many drug dealers supplying drugs to their friends (Antonopoulos et al., 2010; Massari, 2005; Wilkins & Sweetsur, 2006).

6.1.1. Peer Pressure

Peer pressure is often cited as one of the leading triggers for substance abuse, particularly for individuals below the age of thirty (Liu & Gietel-Basten, 2019; Tsui et al., 2011; Zhong et al., 2008). Adolescents typically engage in substance use as a social activity, often gathering together to participate in this behaviour in a ritualistic manner (Wojciechowski, 2020a). Abusing substances can fulfil certain psychological needs, which contributes to a stronger tie with peers (Tam et al., 2018; Wojciechowski, 2020a).

Based on social workers' observations, it is understood that the importance of a solid social circle to adolescents produced peer pressure easily in fear that they would be isolated and left out from the group (Zhong et al., 2008). The influence of peer pressure on drug-taking behaviours is profound, as peers' positive reinforcement encourages and perpetuates drug use (Casey & Jones, 2010). Unfortunately, drug use, especially opioids, can alter brain chemistry and lead to tolerance, dependence, and addiction over time (Kosten & George, 2002).

Furthermore, adolescents' patterns of drug abuse are subject to their friendship groups (Zhong et al., 2008). For example, they may take drug A with group A and drug B with group B (Zhong et al., 2008). Additionally, drug abusers also report that taking drugs is part of group behaviour, and they find it hard, if not impossible, to turn down an offer to take drugs due to the influence of peer pressure (Lee, 2001). Cheung's (2012) study adds to this by suggesting that drug-using youths naturally flock together and rely on each other for security, and their dependence on friends who use drugs influences them to use and continue using drugs themselves (Cheung, 2012). This is supported by the finding that 90.4% of drug abusers in the Chen (2005) study prefer to take drugs with peers.

The family environment does play a significant role in the onset of drug use. Sullivan et al. (2004) found that parental monitoring and support are negatively related to adolescents' initiation of drug use. Family support and parental monitoring can help adolescents recognise emotions, make sense of stressful events, and cope adaptively, thereby alleviating the impacts of negative events and exerting a protective effect (Birtel et al., 2017; Sullivan et al., 2004). Conversely, family conflict and stress have been found to be positively associated with adolescent drug use. In a study of homeless adolescents, family conflict was a significant contributor to their drug use and leaving home (Mallett et al., 2005). In addition to adaptive coping strategies for emotions and stress after leaving home, these homeless individuals may use drugs to establish and maintain relationships with homeless peers or partners (Mallett et al., 2005).

Addressing family-related factors is crucial in preventing the onset of drug use, as the family is the primary influencer of an individual's well-being and social support, shielding the harmful impact of stress on physical and mental health and reducing the risk of drug use (Birtel et al., 2017). A number of studies demonstrate that a significant number of drug abusers have suffered from a negative upbringing and family experience (Lau, 2013; Tam, 2011; Zhong et al., 2008). Being social animals, humans have an innate drive to bond. By growing up with absent and neglectful parents, drug abusers may struggle to bond with their parents, leading them to bond with drugs or negative peers instead (Tam, 2011).

The lack of parental supervision would also lead to more risky behaviour, contributing to the onset of drug abuse (Tam, 2011). A cross-sectional survey conducted by Lau (2013) reveals a high prevalence rate of substance abuse among non-engaged youths (NEY) who characteristically experience developmental disturbances and live in broken families. Further analysis found that NEY who feel misunderstood by their families experience greater levels of stress and abuse substances to cope with the stress. Social worker estimates show that about 80-90% of youth drug abusers experience familial problems (Zhong et al., 2008). The family problems bother the youth to the degree that they avoid going home to face these issues as far as possible. Instead, they spend time with friends on the streets or at their houses, which may increase the risk of drug exposure and subsequent drug use (Zhong et al., 2008). Tang et al. (2006) recognise that the severity of drug abuse is correlational to the number of family problems experienced, noting that family troubles can worsen an individual's drug abuse

situation. The negative experiences associated with drug abuse can have long-lasting effects on individuals and their families, highlighting the importance of addressing family-related factors in prevention and intervention efforts.

6.1.3. Psychological Trauma

The link between psychological trauma and substance abuse is intricate and bi-directional. Studies by Dass-Brailsford and Myrick (2010) and Giordano et al. (2016) indicate that individuals who have experienced trauma are at a higher risk of substance abuse, particularly among females. Specifically, females are more susceptible to trauma resulting from childhood, interpersonal violence, sexual abuse, and the sudden loss of a loved one, while men tend to experience more trauma related to natural disasters and witness violence (Giordano et al., 2016).

Trauma-induced substance abuse is an outcome of coping with the pain and distress caused by traumatic events and vice vase (Giordano et al., 2016). For some individuals, drugs or alcohol can provide a temporary escape from the negative emotions and memories associated with trauma. Substance abuse can also serve as a way of self-medicating symptoms of depression, anxiety, and PTSD that often arise from traumatic experiences.

On the other hand, substance abuse can exacerbate the effects of trauma by increasing feelings of shame, guilt, and isolation. Substance abuse can also trigger flashbacks, nightmares, or other symptoms of PTSD. The use of drugs or alcohol can interfere with the brain's natural ability to process and cope with trauma, making it more difficult for individuals to recover and heal.

The relationship between psychological trauma and substance abuse is bidirectional. Substance abuse can increase the likelihood of experiencing traumatic events, such as accidents or violence, due to impaired judgment, risky behaviour, and exposure to dangerous situations. Substance abuse can also lead to social, financial, and legal problems that can further contribute to trauma.

Furthermore, individuals who have experienced trauma may be more susceptible to addiction due to changes in the brain's reward and pleasure centres. Trauma can result in alterations in the brain's dopamine and stress response systems, which can increase the likelihood of developing substance abuse problems.

In conclusion, the relationship between psychological trauma and substance abuse is

complex and interconnected. Trauma can lead to substance abuse, and substance abuse can exacerbate the effects of trauma. It is essential to address both issues simultaneously and provide a safe and supportive environment for individuals to heal and recover. By understanding the relationship between psychological trauma and substance abuse, we can develop more effective prevention and intervention strategies to support individuals who are struggling with these issues.

6.1.4. Curiosity and Impulsivity

The alluring nature of drugs and their chemical effects on humans can spark curiosity in individuals, leading them to experiment with drugs. A survey found that the primary reason individuals first took drugs was out of curiosity triggered by friends or classmates who took drugs (Cheung, 2012). 15.4% of survey respondents said that their friends suggested they try drugs, enticing them to experience the same (Cheung, 2012). This curiosity can be further fuelled by the desire to fit in with a social group or to experience the same effects as their peers (Witteveen et al., 2007).

Moreover, some individuals may try different drugs because they become bored with the effects of their current drug use (Zhong et al., 2008). This can lead to polysubstance use, which increases the risk of addiction and other negative consequences. In addition, partners can also trigger curiosity about drug use. For example, a study on substance abuse patterns in females found that 60% of female ice users were introduced to drugs by their partners (Laidler et al., 2004). By observing the behavioural changes in their partners when under the influence of drugs, these women reported becoming interested in experiencing the same effects, leading to drug use (Laidler et al., 2004).

Curiosity is particularly significant for the onset of drug use among adolescents. Adolescents are more likely to take risks and experiment with drugs due to their developing brains (Casey & Jones, 2010). Moreover, the adolescent brain's reward system is more sensitive to the effects of drugs, making them more vulnerable to addiction (Casey & Jones, 2010).

In addition, certain personality traits, such as sensation-seeking and impulsivity, can contribute to drug use, especially among male adolescents (Fehrman et al., 2019; Perry & Carroll, 2008). When rewards of drug taking are presented immediately, impulsivity leads to higher reactivity to drug abuse (Perry & Carroll, 2008).

Sensation-seeking individuals are more likely to seek out novel and exciting experiences

and feelings, including drug use (Fehrman et al., 2019). On the other hand, impulsivity is a multidimensional trait that can lead a person to act without considering the consequences or be unable to inhibit their impulses, which may result in trying drugs without adequate forethought (Perry & Carroll, 2008). When these two personality traits are combined, the individual is at a significantly increased risk for all types of drug use (Fehrman et al., 2019).

While impulsivity is a predictor of high-risk drug use, drug use can also exacerbate impulsive personality traits, resulting in a cycle of impulsive and drug-seeking behaviour that can lead to dangerous and potentially fatal outcomes, including overdose morbidity and mortality (Perry & Carroll, 2008). Even if impulsivity is not a determining factor in drug use, it produces additive influences with other risk factors on vulnerability to drug abuse.

6.1.5. Poor Academic Performance

Research has shown that poor academic performance is a significant risk factor for drug use among youth (Cox et al., 2007; Lowe et al., 2020; Zhong et al., 2008). These youths are often perceived and labelled as troublemakers at school, making it difficult for them to disassociate themselves from the label and succeed academically. This situation can lead to a dislike for schooling, and the inability to be accepted may lead them to turn to drugs (Zhong et al., 2008).

Furthermore, a negative correlation between educational attainment and drug abuse has been identified, whereby the lower the educational attainment, the greater the risk of drug abuse (Liu & Gietel-Basten, 2019). This association may be due to the fact that a drug abuse lifestyle is costly to well-educated individuals, who have more to lose should their drug addiction become more severe (Liu & Gietel-Basten, 2019). In addition, similar to the coping strategy mentioned in Social Environment, initiation of substance-use behaviours is proposed to be the means to cope with anxiety over academic failures (Cox et al., 2007)

Moreover, the relationship between poor academic performance and drug use may be bidirectional. Drug use can lead to poor academic performance, which can further perpetuate drug use (Cox et al., 2007). Impairment of cognitive function, memory, and attention due to drug use can make it challenging for individuals to learn and retain information (Gould, 2010), contributing to a cycle of poor academic performance and drug use.

6.1.6. False Perceptions on the Benefits of Drugs

Positive attitudes towards illicit drugs can contribute to the maintenance of drug abuse. Often, drug abusers rely on their drug-abusing peers for information about drugs, which can lead to a skewed understanding of the harmful effects of drugs. This is because drug-abusing peers may positively bias their explanations of drugs, emphasising the euphoric effects while downplaying the potential harms (Sung, 2001). Additionally, drug abusers may resist negative information about drugs because they consider themselves experts and believe they are immune to the harmful effects of drugs (Sung, 2001).

This mindset can result in a high acceptance of drug use, which goes against mainstream anti-drug campaigns. Some people even turn to drugs as a way of fulfilling their belief that life should be about "trying new things" and "having fun," thereby contributing to the use of recreational drugs like ketamine and ecstasy (Cheung et al., 2011; Chie et al., 2015). This has led to the emergence of a new drug market in Hong Kong that is different from traditional heroin markets.

The new markets for drug use and hidden drug abuse are primarily composed of young people who are employed or studying rather than being marginalised or socially deprived (Laidler et al., 2004). They often use drugs at entertainment venues or at home and have a high acceptance of drug abuse (Lam et al., 2004). This increase in potential consumers has made it easier for young drug dealers to establish their networks and businesses. Ketamine is sometimes called "the cocaine of poverty" because it is an affordable choice of drug for the majority, incentivising the formation of drug businesses and leading to an increase in the number of drug dealers in the market (Ruggiero & Khan, 2007).

Once immersed in the drug environment, users may accumulate false perceptions or drug knowledge to rationalise their abuse. For example, in local drug culture, ice is a preferred drug because of its ability to neutralise the sedative effects of heroin (Laidler et al., 2004). This belief leads drug abusers to perceive ice as a drug that can help them rather than harm them, contributing to the vicious cycle of drug abuse. Similarly, for ecstasy and ketamine, the misconception that they are not addictive or dangerous drugs encourages drug abusers to abuse them (Laidler et al., 2004), while psychoactive substances are seen as medications intended to alleviate psychological disorders (Chie et al., 2015).

Furthermore, Cheung et al. (2011) revealed that one of the more prominent

misunderstandings of drug use is the belief that drugs will bring some benefits to the body, such as weight loss, increased muscle strength, and pain analgesic effects. Particularly, heroin users always rationalised their abuse as the alleviation of physical pain and other sickness troubles (Sheikh & Bashir, 2004). A small subset of heroin users relies on drugs to enhance their sexual pleasure and may become dependent on this approach to maintain normal sexual functioning (Sheikh & Bashir, 2004).

Misconceptions about the benefits of drugs can be a powerful motivator for individuals, especially females, to consume drugs. For example, some female ice (crystal methamphetamine) users reported starting to take ice because of its apparent weight loss qualities (Laidler et al., 2004). Many first-time drug abusers also express the false belief that certain drugs are not as addictive or dangerous compared to others (Laidler et al., 2004; Zhong et al., 2008). By neutralising the negative effects of drugs, individuals consume drugs in an effort to look "fashionable" and "trendy," thus enhancing their social status among their peer groups (Laidler et al., 2004).

By promoting false beliefs about the benefits of drugs, individuals may be more likely to consume them, putting their health and well-being at risk. Unfortunately, correcting misconceptions about the benefits of drugs may only be able to reduce the frequency, but not the onset of substance use (Sun et al., 2008). Therefore, interventions aimed at correcting misconceptions about the benefits of drugs need to be accompanied by other strategies.

14.2. Stage 2: Persistence of Drug Abuse

Given that most drug abusers seek help after a deep involvement or are likely to be identified after a long history of drug use (Anglin et al., 1996; Dennis et al., 2005; Legislative Council Panel on Security, 2023), it's important to consider the factors that contribute to persistent drug use. Hser et al. (2007) highlighted the chronic nature of drug use, which makes it difficult for individuals to quit once they engage in drug use. While individual-level factors may play a role in pushing individuals to use drugs, such as the onset factors previously mentioned, the following sections will explore more macro-level factors that sustain people's drug use habits.

6.2.1. Drugs as a Pseudo Solution
Some drug abusers view drugs as a cure to their problems, but these healing effects are often temporary and lead to a cycle of dependency, exacerbating the issues and resulting in

negative consequences. A study of female drug abuse patterns found that drugs can temporarily alleviate the pain associated with life problems and provide an escape from the stresses of reality (Laidler et al., 2004). Similarly, people with post-traumatic stress disorder abuse substances to manage their PTSD symptoms, resulting in a double chance of symptom recurrence (Bradizza et al., 2006). This coping strategy further activates the brain circuits to adopt drugs as an effective ubiquitous response for both stress relief and mood enhancement (Sinha, 2001). The quick effect of drugs leads drug abusers to associate drugs as a healer to their problems, resulting in continued drug use. Physical withdrawal symptoms can also be a factor in persistent drug use, as the symptoms can be too much to bear, leading to a perceived need to take drugs to alleviate the pain (Laidler et al., 2004). In addition, drugs can produce pleasurable euphoric sensations, leading to a desire to continue feeling that high (Sung, 2001).

Several studies found that drug abuse served a significant role in handling social pressures and self-esteem issues in Hong Kong (Wu et al., 2014; Laidler et al., 2004; Cheung et al., 2003). Females, for example, tended to use drugs such as ice to maintain a desired slender appearance (Laidler et al., 2004). However, this pseudo-beauty comes with severe consequences for their health status. For example, using ice for weight control can probably lead to an eating disorder requiring intensive health care (Neale et al., 2009). Research indicates that up to 40% of female substance abusers have permanent eating disorders (Greenfield et al., 2010). Also, Lau (2011) found that many of the female substance abusers investigated were underweight and lacked adequate nutrient intake. Thus, the aesthetics produced by drug use is not a real solution to their self-esteem but rather a more terrifying consequence.

To an extent, men who have sex with men (MSM) also use drugs to boost self-esteem and self-confidence, particularly in social situations (Wang et al., 2019). Drugs may act to ease the anxiety that individuals may experience in social environments by prompting them to behave more outgoing and freer (Wang et al., 2019).

Although the drugs may be temporally fulfilled the physical and psychological needs, either short-term or long-term drug use can result in a wide range of negative side effects, including high blood pressure, myocardial infarction, stroke, insomnia, anxiety/panic attacks, mood swings, and cognitive impairments (Reardon & Creado, 2014). Research also found that negative consequences of substance abuse can be lifelong, like delaying cognitive and social-emotional development and increasing the rates of major mood disorders and conduct problems in teens' lifetime (Chung & Maisto, 2006). Therefore, drugs are merely a pseudo-solution for

drug abusers. Alternative coping strategies and support systems are needed to replace the drug's functions.

6.2.2. Affordability of Drugs

In a holistic sense, the increasing prevalence of drug abuse in Hong Kong is attributed to declining drug prices. Social workers explain that the cost of drugs declined from $800 to $250-$350 per portion during the early 2000s (Zhong et al., 2008). As a result, more young people were able to buy and consume cocaine in social settings, leading to the persistence of drug abuse. Additionally, the relatively cheaper drug prices offered in the Mainland explain the trend of cross-boundary drug use between Hong Kong and the Mainland (So, 2011). Many young people are attracted to using psychotropic substances on the Mainland because of the lower prices, which makes fuelling their drug addiction less of a financial burden (Lau, 2003; Zhong et al., 2008).

Triad societies play a huge role in the local drug industry and have a profound influence on youths' persistence in drug abuse by providing drugs at a cheaper cost (So, 2011). Many youths initially buy drugs from triad members, and by keeping in contact to maintain a steady supply of drugs, the triad members eventually become familiar enough with them to add the youths to their distribution network (Lo, 2012; Sung, 2001). The youths are incentivised to help with the triad societies' distribution of drugs as they may purchase the drugs at a cheaper price in exchange (Sung, 2001). Given their connection with the triads, such youths may end up working as dealers within their peer group to sustain or expand the drug social circles, allowing them to earn profits for their consumption at the same time (Sung, 2001). Triad societies leverage the youth drug culture to expand their businesses by incentivising drug use with cheap prices, which leads to the persistence of drug abuse among young people.

6.2.3. Accessibility of Drugs

The accessibility to drugs has a significant impact on the persistence of drug abuse. Research highlights that the patterns in which drug abusers abuse drugs are contingent on the availability of drugs in their social circle (Sung, 2001). This suggests that the simple presence of drugs in an environment is conducive to drug-taking behaviours. The accessibility of drugs also extends to why it is consumed. In Sung's study (2001), ice users reported that they enjoyed the fact that they could tailor their drug experiences based on what they preferred. They also highlighted that taking such drugs can be done in solitude or in a social environment (Sung, 2001). This allows drugs to be very accessible and flexible in terms of the appropriate time to

take them, thus contributing to the persistence of drug abuse.

In Hong Kong, a multilevel analysis of the demography of drug abuse reveals that drug abusers tend to live in high-crime regions, whether they are geographically dense, such as Sham Shui Po, or remote, like Yuen Long (Liu & Gietel-Basten, 2019). The subculture of a high-crime region may influence residents to immerse themselves in such culture and embrace it, leading to the onset of drug abuse. Additionally, the relative accessibility to drug supply in such regions may enable drug abuse to develop. This is supported by the finding that drug abuse on Hong Kong Island is relatively insignificant due to the large number of bars that allow people to substitute drugs with alcohol (Bachman et al., 2008; Liu & Gietel-Basten, 2019).

The accessibility of drugs can support drug-taking behaviours, especially among vulnerable populations. Triad societies in Hong Kong target youth and drug abusers, making drugs more accessible to them in an affordable and convenient way (Lo, 2012; Sung, 2001). This increases the likelihood of drug-taking behaviours among these populations. Additionally, bars that allow people to substitute drugs with alcohol can increase drug accessibility and serve as a secure means for people to consume drugs in hidden and private places (Bachman et al., 2008; Liu & Gietel-Basten, 2019). This can make it difficult for law enforcers to crack down on drug abuse and further increase drug-taking behaviours.

6.2.4. Party Culture

Drug abusers often associate the party culture with drug abuse, with drugs and partying being seen as inseparable activities (Sung, 2001; Tam et al., 2018). Research suggests that rave parties are commonly associated with drug use, with a high percentage of drug abusers using drugs in party settings (Chen, 2005; Tam et al., 2018). Chen's (2005) finding that 72.3% of drug abusers use drugs in party settings. Drugs are often openly used and easy to obtain in party settings, and there is a perception that drugs taken as part of the "party culture" are unproblematic (Laidler et al., 2004; Lee, 2001; Tam et al., 2018). Drugs are used to enhance the euphoria experienced in party scenes. Overdoses were sometimes observed at rave parties, suggesting that large amounts of drugs were consumed before entering parties (Lee, 2001). However, the excitement and euphoria associated with party settings further encourage drug-taking behaviours, leading to increased rates of drug abuse and overdose.

Despite efforts by the government to restrict drug dealing in parties and discos, concerns have been raised that driving parties underground could lead to the emergence of an

Underground Rave Culture (URC), encouraging unregulated drug use among youth (Lam et al., 2004; Lee, 2001; Tam et al., 2018). Cheung and Cheung (2018) have highlighted that the acceptance and permissiveness of recreational drug use, particularly party drugs, continues to grow among the youth population in Hong Kong. This trend is of concern, especially considering the intertwined relationships between heavy music, vigorous dancing, and drug use at scattered music events (Charrieras & Mouillot, 2021; Tam et al., 2018). These concerns have arisen, in part, due to the shift towards underground party settings following the crackdown on disco establishments since the mid-2000s (Cheung & Cheung, 2018; Tam et al., 2018).

The party culture also evolved as chemfun or chem sex parties among the men who have sex with men (MSM) using drugs to enhance their sexual activities (Wong et al., 2020). This phenomenon has gained attention relatively recently, resulting in limited knowledge and research on this specific aspect (Chan et al., 2022; Wong et al., 2020). Chemfun parties often take place in private locations such as gay saunas, bars, private discos or clubs, personal houses, and leased rooms (Chan et al., 2022; Wang et al., 2020). The scarcity of research and knowledge on this issue has hindered the development of effective interventions (Wang et al., 2020).

This lack of surveillance and policing in private parties can make it convenient for youth to engage in risky behaviours and increase their drug-taking behaviours, leading to potential long-term consequences on their mental and physical health, as well as their family and social relationships (Lam et al., 2004; Lee, 2001).

14.3. Stage 3: Treatment

Drug abusers are identified or spontaneously seek help from professionals after a long history and deep involvement in drugs (Anglin et al., 1996; Dennis et al., 2005; Legislative Council Panel on Security, 2023). Despite seeking help from professionals, many drug abusers struggle to break free from their addiction (Birtel et al., 2017; Dennis et al., 2005). There is an understanding that the earlier the prognosis for drug abuse, the more successful the treatment outcome (Tsui et al., 2011). Drug abuse cases that are treated too late may face lasting psychiatric problems, thus highlighting the importance of early detection (Cheung et al., 2001).

Exposure to multiple treatment programs has been found to produce positive impacts on an individual's abstinence and readiness for change in foreign studies (Dennis et al., 2005; Gibbs & Lytle, 2020). While twelve-step based group therapies are well-established, individual psychotherapy interventions are also gaining evidence of positive treatment outcomes (Harvey

et al., 2020). While the effectiveness of different treatment methods remains uncertain, the combination of individual and group interventions may provide additional benefits beyond the direct effects of each treatment alone. (Harvey et al., 2020). On the contrary, Chung and Shek (2018) discovered that treatment-related fears were prevalent and that these fears may have cumulative effects that can undermine treatment outcomes. They also emphasised the role of cultural factors in shaping these fears, such as "saving face" and maintaining harmony (Chung & Shek, 2018).

Moreover, fewer than 25% of incarcerated individuals, who require treatment for substance use, actually receive it while in custody, hindering successful community re-entry (Belenko & Peugh, 2005; Gibbs & Lytle, 2020). Few programs are available to address the needs of incarcerated substance abusers, both during custody and after their release (Gibbs & Lytle, 2020). This lack of treatment may explain the limited deterrent effect of the incarceration penalty, which may ultimately contribute to relapse (Gibbs & Lytle, 2020). Drug courts have emerged as a promising approach to providing intensive supervision and fulfilling the treatment needs of substance abusers while also reducing costs to the criminal justice system and freeing up prison capacity (Gibbs & Lytle, 2020).

Overcoming drug addiction can be a challenging journey, but it's essential to recognise that change is possible, and every step towards recovery is a step in the right direction. Despite the numerous treatments available across the world, the following parts merely highlight a few prevalent programs and services that have empirically investigated their effectiveness. The last part will be an overview of Hong Kong drug-related services.

6.3.1. Family-Based Interventions

Family therapy is a form of substance abuse treatment that involves family members in the recovery process (O'Farrell et al., 2010). Family support can be a significant factor in reducing drug use, as supported by the finding that self-reported drug use was significantly reduced with family emotional support (Alward et al., 2020). Moreover, sustaining positive and supportive intimate relationships is crucial for achieving long-term abstinence or stable recovery from substance use (Pettersen et al., 2019). Pettersen et al. (2019) pointed out the significant influence of caring relationships with siblings and the impact of a deceased family member on the decision to cease substance use. Through family-based interventions, risk factors for drug use in the family environment, such as ineffective communication, low cohesiveness, and poor problem-solving skills, are aimed to address so as to generate profound

and long-lasting influence on the individuals (Winters et al., 2018).

Another research suggests that the treatment outcomes are overweighed those individual-based treatments (O'Farrell et al., 2010). Behavioural Couples Therapy (BCT) is a specific form of family therapy that has demonstrated effectiveness in treating substance abuse disorders (O'Farrell et al., 2010). Empirical research has shown that the involvement of a spouse in the recovery process is a crucial element of social support that can effectively reduce the risk of relapse (Ellis et al., 2004). BCT focuses on improving the quality of the intimate relationship between partners and enhancing communication to maintain stable abstinence and reduce substance-related problems (O'Farrell & Fals-Stewart, 2000). The intimate relationships between couples can provide support and encouragement, which are essential for maintaining abstinence and reducing substance-related problems.

6.3.2. Medical-Assisted Treatment (MAT)

Medication-assisted treatment (MAT) has been found to be effective and well-recognized in reducing psychological cravings, withdrawal symptoms, and euphoric effects associated with opioid-type substances in adults through the use of methadone, buprenorphine, and naltrexone (Langdon et al., 2020; Meyers et al., 2020; Richard et al., 2020; Winters et al., 2018). However, drawbacks associated with MAT include potential medication side effects, unclear consequences for adolescents, negative impacts on infants of pregnant female users, and continued dependency on methadone, buprenorphine, or naltrexone (Meyers et al., 2020; Winters et al., 2018; Wouldes & Woodward, 2020). Additionally, Cepeda et al. (2020) noted that drug abusers may not be able to afford the cost of MAT, which can undermine their willingness to seek help.

Despite the effectiveness of reducing the dosage, MAT can be easily misunderstood as a drug replacement rather than treating dependency (Richard et al., 2020). Therefore, it is crucial to erase the social stigma towards MAT is crucial to reduce blame and discrimination and enhance its effectiveness (Richard et al., 2020).

Among the BDF supported studies, five studies have examined the use of medication, both Chinese and Western, to help treat individuals with drug abuse (Yew, 2020; Ng, 2014; Tam, 2014; Xu et al., 2006; Xu et al., 2009). A common trend in medical treatments is to employ pharmaceutical drugs to offset the physical damages caused by illicit drugs for purposes of drug detoxification. However, it is important to note that MAT solely reduces the physical

harms induced by substance abuse rather than addressing the root causes of addiction.

6.3.3. Tailored Treatment

The effectiveness of standardised treatments for drug abusers has been a topic of debate in the field of addiction treatment. Cheung et al. (2001) found that substance abusers of all sorts are often treated in the same way, with a lack of tailored and specialised therapeutic services for non-opiate abusers who may not respond as effectively to a treatment designed with the opiate abuser patient in mind. Psychotropic substance abusers do not show the same abuse patterns and withdrawal symptoms as one another. Therefore, it questions the efficacy of the current treatment approaches that may not be effective for all substance abusers.

One potential solution to this problem is to provide treatments aligned with the patient's cultural patterns and values. Bernal et al. (2009) argue that the most effective form of treatment is provided when it aligns with the patient's cultural background. Integrated cognitive behavioural therapy (ICBT) is a multi-faceted approach to treating drug abuse that combines different established Western treatment techniques, what Wong, Zhuang, and Ng (2020) developed a culturally attuned ICBT treatment model that incorporates aspects of Asian cultures, such as collectivist values, and reported its positive influence on Chinese youths suffering from drug abuse problems.

The study found that over time, Chinese patients who received ICBT reported a significant improvement in their drug dependence, frequency of drug abuse, dysfunctional beliefs, and coping mechanisms compared to the control group (Wong et al., 2020). This suggests that culturally attuned ICBT may be a more effective approach to treating drug abuse in Chinese patients than the standardised treatments that are currently offered.

These findings have important implications for the development of addiction treatment programs that are culturally sensitive and tailored to the needs of different populations. By incorporating cultural values and beliefs into addiction treatment, it may be possible to improve treatment outcomes.

6.3.4. Cognitive Behavioural Therapy

Cognitive-behavioural therapy (CBT) is a widely recognised and well-established form of psychotherapy that focuses on the relationship between a person's thoughts, feelings, and behaviours (Wojciechowski, 2020b). The core concept behind CBT is that maladaptive behaviours can be altered by modifying thought processes, even if the environment remains

unchanged (Winters et al., 2018). CBT has emerged as one of the most effective treatments for substance abuse disorders, with strong evidence supporting its efficacy (McMurran, 2007).

Cognitive impairment and maladaptive cognitive processing are not rare among substance abusers, particularly adolescents and those who abuse ketamine, which can impede their ability to lead a structured life (Burleson & Kaminer, 2005; Richardson et al., 2010). However, cognitive-related treatments have demonstrated improvements in executive functioning, which can help secure treatment outcomes (Man, 2015).

In addition to handling twisted beliefs, some CBT programs also included the element of coping skills (Burleson & Kaminer, 2005). Coping skills-based cognitive behavioural interventions for addiction are applied to enhance self-efficacy and strengthen the coping skills of adolescent and adult drug abusers with high-risk situations (Chie et al., 2015; Kadden & Litt, 2011; Sinha, 2001). Burleson and Kaminer (2005) even attributed the success of CBT relapse prevention to the acquisition and application of coping skills.

In addition to addressing twisted beliefs, some CBT programs also focus on developing coping skills (Burleson & Kaminer, 2005). Coping skills-based cognitive-behavioural interventions for addiction are used to enhance self-efficacy and strengthen the coping skills of adolescent and adult drug abusers in high-risk situations (Chie et al., 2015; Kadden & Litt, 2011; Sinha, 2001). Burleson and Kaminer (2005) attributed the success of CBT relapse prevention to the acquisition and application of coping skills. To further enhance the treatment effect, CBT is often integrated with other treatment models, including mindfulness treatment, and implemented on a group basis (Binswanger et al., 2012).

6.3.5. *Mindfulness Treatment*

Mindfulness treatment is recently rising its reputation as an effective approach to reducing the risk of substance abuse over the long term (Bowen et al., 2014). Mindfulness practices can encourage conscious attention to the present moment and help individuals shift their perspective to reduce the urgency and craving of substance use (Breslin et al., 2002; Grant et al., 2017; Hill-Bowen et al., 2021; Witkiewitz & Bowen, 2010). Mindfulness treatments also target stress regulation and attenuation of stress-related cravings, which can help reduce stress and susceptibility to relapse in addiction (Sinha, 2007).

Negative affect triggers an individual's avoidance of unpleasant states, which are repeatedly paired with the function of drugs as a coping mechanism, resulting in urges to abuse

drugs (Bradizza et al., 2006; Breslin et al., 2002). Given that cravings or urges strongly predict abuse of all major drugs, negative affect has been demonstrated to be a prominent triggering effect of cravings and urges (Witkiewitz & Bowen, 2010).

To go against the negative affect, mindfulness practices arouse the brain regions involved in emotion regulation and modulation so as to enhance the acceptance of emotions and acting with awareness (Bowen et al., 2009). Mindfulness practices reinforce the reactions and responses of handling negative emotions rather than avoid or erase them (Witkiewitz & Bowen, 2010).

Emotional avoidance is an important processing circuit that serves as an early warning system for survival, and substance abuse activates this circuit to avoid negative affect so as to regain homeostasis (Sinha, 2001). Mindfulness meditation prevents the escalation of dysfunctional thoughts and reduces emotional avoidance by regulating and desensitising negative affect (Breslin et al., 2002; Bowen et al., 2009). The cue-reactivity paradigm has frequently been applied to investigate the neurobiological processes associated with addiction, including reward, behaviour, craving, and the incentive salience of drug-associated stimuli (Hill-Bowen et al., 2021). The substance cues included but were not limited to people, places and objects associated with drug use, as well as drug paraphernalia such as needles, drug pipes, cocaine powder, or beer cans (Hill-Bowen et al., 2021; Sinha, 2007). Cue-induced urges are a major reason for drug abuse, as they are memory-based, stereotyped, and acted upon automatically, with little conscious awareness or effort (Breslin et al., 2002). Mindfulness meditation has been found to disrupt this cyclic process of forming associations between emotion avoidance and drug abuse by progressively replacing the automatic processing of drug-related stimuli and lowering the activation of the drug use memory network (Breslin et al., 2002; Witkiewitz & Bowen, 2010). This disruption minimises the likelihood of drug use, making mindfulness meditation a promising approach to addiction treatment.

6.3.6. Motivational Enhancement Therapy

Many drug abusers are forced to receive treatment by family members or the criminal justice system, so they have less motivation to change their behaviours (Chung & Maisto, 2006; Winters et al., 2018). Therefore, this approach employs a non-confrontational, person-centred style to help individuals examine the pros and cons of their substance use patterns and create goals for a healthier lifestyle, encouraging treatment engagement and quitting substances (Winters et al., 2018).

Cheung et al. (2001) conducted a study to determine whether offering motivational interviewing to individuals who were in the early stages of drug abuse could effectively treat drug abuse. The study found that patients in the intervention group experienced a significant decrease in drug use compared to the control group. Even after six weeks following the follow-up appointment, patients in the intervention group experienced a dip in drug use from 43.5% to 12.9%, whereas the control group dropped only from 41.0% to 36.1% (Cheung et al., 2001). Moreover, even after six months, the reduction in drug use was maintained.

In addition to the reduction in drug use, the study also found that the intervention group was more likely to hold negative attitudes about drug use compared to the control group (Cheung et al., 2001). The researchers presumed that this negative attitude was the antecedent to the reduction in illicit drug use. Similarly, Ball et al. (2007) reported inconsistent findings across motivational enhancement programs. Rohsenow et al. (2004) attributed the treatment outcomes to the initial motivation to change, in which lower initial motivation gains better outcomes. These findings are consistent with the idea that attitudes and beliefs play a crucial role in determining an individual's behaviour.

Furthermore, Cheung et al. (2001) found that motivational interviewing can impact not only immediate drug use and attitudes but also long-term goals in patients' drug use patterns. Supplementary research found that about 14% of participants in the intervention group were willing to seek further treatment for their psychiatric symptoms and to be helped to quit their drug use, while none of the participants in the control group was reported to do so (Cheung et al., 2001). This indicates that motivational interviewing can have a positive impact on patients' willingness to seek help and change their behaviour in the long term.

6.3.7. The Multi-Modality Approach to Drug Treatment in Hong Kong

By adopting a multi-modality approach, Hong Kong has diversified drug treatments to support drug abusers in attaining drug abstinence and reintegration into society. Based on the categorisation of Narcotics Division, the services can be divided into five types: 1) compulsory placement scheme, 2) voluntary residential treatment and rehabilitation program, 3) out-patient methadone treatment program, 4) community-based counselling services, and 5) substance abuse clinics (Narcotics Division, 2018; 2023). According to Narcotics Division (2023), the current service providers of drug treatment and rehabilitation services include public sectors (e.g., the Correctional Services Department, the Department of Health, the Hospital Authority), governmental-subvented non-governmental organisations (NGOs), and private sectors. Most

of the service providers have religious backgrounds. Some agencies are operated on a self-financing basis. In addition to the listed centres, the Narcotics Division and Beat Drugs Fund Association have also funded various drugs-related studies to NGOs and researchers, but they are not included in the following section.

Table 1. Different modalities of drug treatment and rehabilitation in Hong Kong

Type of Services	*Number of Centres/ Halfway Houses*	*Government Subvention*
Compulsory Placement Scheme	4 Correctional Institutions	Not Applicable (Operated by the Correctional Services Department)
Voluntary Residential Treatment and Rehabilitation Program	31 Centres (operated by 15 NGOs)	19 Centres
Out-patient Methadone Treatment Program	18 Clinics	Not Applicable (Operated by the Department of Health)
Community-Based Counselling Service	13 Centres	13 Centres
Substance Abuse Clinic	9 Clinics	Not Applicable (Operated by Hospital Authority)
SARDA Methadone Treatment Programme (Counselling Service)	18 Clinics	Administered by Department of Health

Source: Narcotics Division, 2023

A)   Compulsory Placement Scheme

Hong Kong offers both voluntary and mandatory drug treatment and rehabilitation services. While most of these services are voluntary, certain drug-related offences can result in court-ordered mandatory participation in a compulsory placement scheme. Under this scheme, offenders may be sentenced to incarceration in a designated correctional institution managed by the Correctional Services Department (CSD) or to receive treatment from other residential or community-based drug treatment and rehabilitation units in accordance with court orders or

probation orders (Narcotics Division, 2018).

The CSD is primarily responsible for providing mandatory residential drug treatment and rehabilitation services in Hong Kong (Narcotics Division, 2023). Under the Drug Addiction Treatment Centres Ordinance (Cap 244), the department manages four drug addiction treatment centres, including the Hei Ling Chau Addiction Treatment Centre, Nei Kwu Correctional Institution, Lai Sun Correctional Institution, and Lai King Correctional Institution. These centres offer drug treatment and rehabilitation services to adult male/female drug abusers or adolescent drug abusers and adopt both the medical model and the biopsychosocial model of treatment.

The drug addiction treatment institutions are staffed by qualified personnel who provide basic medical care services to inmates. In addition to medical care, rehabilitation officers provide individual and group counselling and assist in implementing various rehabilitation programs. Mandatory treatment at these centres lasts for two to twelve months, followed by one year of statutory supervision after release (Correctional Service Department, 2023).

The medical model of addiction treatment at these institutions involves hospitals staffed by qualified personnel who provide basic medical services to inmates. Doctors from the Department of Health diagnose and prescribe medication to assist drug abusers in managing their withdrawal symptoms and successfully overcoming their addiction.

Under the biopsychosocial model of addiction treatment, the drug addiction treatment institutions of CSD include an operations division, a psychological services section, and a rehabilitation unit. The operations division is responsible for the daily management and operation of the centres, assisting drug abusers in establishing regular daily routines and providing physical activities and work duties. The psychological services section provides preventive treatment groups to prevent relapse and offer psychological counselling. The rehabilitation unit is responsible for assessing the adaptation and recovery progress of drug abusers, arranging family visits, individual and group counselling, and vocational training.

The compulsory placement scheme lasts for two to twelve months of incarceration and then follows one year of statutory supervision by the aftercare officer from the rehabilitation unit (Correctional Service Department, 2023). During the one-year statutory supervision period following mandatory treatment, drug abusers must perform regular urine testing and receive counselling or home visits from the aftercare officer to assist them in maintaining their sobriety.

If drug abusers relapse during this period, they may be subject to a recall order and be required to return to the drug addiction treatment centres for further treatment.

B)   Voluntary Residential Treatment and Rehabilitation Program

In addition to the compulsory placement schemes, there are 31 voluntary residential drug treatment centres operated by 15 NGOs. Some of these centres are funded by the Department of Health or the Social Welfare Department, while others are self-financed. Because many voluntary residential drug treatment and rehabilitation services in Hong Kong are managed and operated by NGOs with religious backgrounds, these organisations adopt the gospel-based model in drug treatment and rehabilitation. Due to the various background and different needs for treatment and rehabilitation services among drug abusers, NGOs developed a range of programs using different treatment models. Although some of these programs share similar names in their treatment services, they can be different.

The Hong Kong Society for the Aid and Rehabilitation of Drug Abusers has the largest number of drug treatment centres and halfway houses among these programs, which are four drug treatment centres and five halfway houses (Narcotics Division, 2023). These 9 programs are under the subvention of the Department of Health and the Social Welfare Department. Medical and biopsychosocial models are adopted to offer medical care, individual and group counselling, social rehabilitation and occupational therapy, family visits, and recreational activities (The Society for the Aid and Rehabilitation of Drug Abusers, 2022).

In addition, Caritas Hong Kong Wong Yiu Nam Centre and the Hong Kong Christian Service Jockey Club Lodge of the Rising Sun are funded by the Department of Health, both of which serve male drug abusers under the age of 35 and adopt the medical and biopsychosocial model(Caritas Wong Yiu Nam Centre, n.d.; Hong Kong Christian Service, 2023). These two NGOs both offer medical services, individual and group counselling, family intervention and support. In addition to medical services and counselling, Wong Yiu Nam Centre also provides language and vocational training, while Lodge of the Rising Sun advocates recreational activities apart from the common services. Although Lodge of the Rising Sun offers relatively shorter residential treatment (normally three to six months) compared to Wong Yiu Nam Centre (last to one year), Lodge of the Rising Sun provides outpatient services.

In addition to the three NGOs funded by the Department of Health, the Social Welfare Department (2022) also supported 13 residential drug treatment and rehabilitation centres and

halfway houses being operated by 6 NGOs, including Barnabas Charitable Service Association, Christian New Being Fellowship, The Evangelical Lutheran Church of Hong Kong, Operation Dawn, Society for the Aid and Rehabilitation of Drug Abusers and Society of Rehabilitation and Crime Prevention, Hong Kong.

The Society of Rehabilitation and Crime Prevention, Hong Kong adopts a biopsychosocial model and provides individual counselling, employment, and recreational services to drug addicts who have completed addiction treatment to help them maintain their drug-free lifestyle (The Society of Rehabilitation and Crime Prevention, Hong Kong, 2023). It offers short-term accommodation services for individuals who face unfavourable living conditions during their rehabilitation journey.

The remaining NGOs providing voluntary residential treatment are all containing religious backgrounds. Faith-based addiction treatment and rehabilitation services are mentioned across all these NGOs. Operation Dawn (n.d.) stated the phases of conversion during the faith-based treatment. It divided the treatment into four phases: 1) Detoxification (first to third months); 2) Believing & Struggling (fourth to sixth months); 3) Stabilizing in faith (seventh to ninth months); 4) Consolidation & Preparatory (tenth to twelfth months). After leaving the program, social workers provide six months of follow-up care (Operation Dawn, n.d.). However, Evangelical Lutheran Church Social Service – Hong Kong (2023) only divided their conversion during the faith-based treatment into three phrases: Abstinence and contemplation period (斷癮靜思期, 1-3 months), reflection and reconstruction period (反省重建期, 4-6 months), rooting and training period (紮根訓練期, 7-9 months). This further highlights the variation under similar treatment programs.

These NGOs with religious backgrounds commonly provide faith-based treatment, counselling, physical activities, interest groups, and work training. Additionally, some NGOs offer specialised services to meet the unique needs of their clients. For instance, Enchi Lodge covers the most diversified types of services, including educational classes, outdoor activities, volunteer visits, family visits, and community services (DACARS Limited, 2023). Coherent with the emphasis on family, St. Stephen's Society (n.d.) offer a family camp for the families of drug abusers and establish parent support groups. Given the importance of social support, peer counselling is advocated by the Perfect Fellowship (2023) and Christian New Life Association (2023).

Wu Oi Christian Centre (2011) provides basic skills training and occupational therapy during residential treatment. Christian New Being Fellowship (2023) emphasise detoxification, spiritual guidance and recreational activities. Evangelical Lutheran Church Social Service – Hong Kong (2023) also is the NGO mentioned outreach visits to connect the substance abusers with the community for building up an anti-drug platform.

Barnabas Charitable Service Association is an organisation dedicated to providing faith-based drug treatment and rehabilitation for female drug abusers only (Barnabas Charitable Service Association, 2023). Their services include faith-based addiction treatment and rehabilitation, individual and group work, family counselling and education, general education and vocational skills training, community networking, work adaptation/referral services, and relapse prevention. Compared to other NGOs, community networking is highlighted to fulfil the female abuser's needs.

The length of these residential treatments varies from 7 days (Wong Yiu Nam Centre, n.d.) to 18 months (Operation Dawn, n.d.), depending on the individual's voluntary participation. Meanwhile, The Christian Zheng Sheng Association (2023), Glorious Praise Fellowship (n.d.), and Wu Oi Christian Centre (2011) offer the shortest length of stay, with no maximum time limit, probably implying unlimited time for voluntary staying. In general, the length sets between 6 to 12 months. Chung and Maisto (2006) pointed out that individuals, who will to looking for a drug rehabilitation treatment, are likely to acquire abstinence during the period of treatment and the ideal of lifelong abstinence, in which longer treatment brings better outcomes.

Apart from the organisations listed on the website of the Narcotics Division (2023), Christian Zheng Sheng Association also manages a private school, Christian Zheng Sheng College, offering life education for problematic students with drug addiction and other behavioural problems (Christian Zheng Sheng Association, 2023). In a recent study, Chan (2019) examined the effectiveness of Zheng Sheng College in offering substance abuse rehabilitation. From both qualitative and quantitative data, the study found that the length of stay had a temporal relationship with positive behavioural change, with longer stays resulting in more positive changes such as delayed gratification and self-control (Chan, 2019). According to interviews with students and staff at Zheng Sheng, a successful stay was defined by factors such as employment, a strong work ethic, stability, and clear goals (Chan, 2019), highlighting the importance of a holistic approach to rehabilitation. Strategies such as exercise, meditation,

proper breathing techniques, a balanced diet, and effective time management have been suggested as effective ways to prevent drug use among young people (Chie et al., 2015).

C)   Out-Patient Methadone Treatment Program

There are currently 18 methadone clinics managed and operated by the Department of Health in various districts of Hong Kong. These clinics offer medical-assisted treatment (MAT) for male and female opioid analgesic users, providing medical and psychosocial treatments. The services include methadone substitution therapy, detoxification, medical assessment and health education, social workers' guidance and counselling, and referrals to other treatments (Department of Health, 2020). Although users may still require opioids, methadone helps reduce drug cravings and self-administration. Patients who are unable to achieve total abstinence may choose to either continue maintenance on methadone or undergo a gradual detoxification process through reduced methadone consumption (Narcotics Division, 2021). To ensure affordability for service users, the cost of each visit is only $1 for eligible persons.

D)   Community-Based Drug Rehabilitation

The community-based drug treatment and rehabilitation service consists of 11 substance abuse counselling centres for psychotropic substances managed by 7 NGOs. These centres are funded by the Social Welfare Department and adopt medical and biopsychosocial models for treating drug abusers. In the medical model of addiction treatment, each counselling centre has a registered nurse (Psychiatry) on duty to provide comprehensive body checks upon intake and to follow up on health issues during outpatient withdrawal treatment. The centres also collaborate with substance abuse clinics or private psychiatrists to help substance abusers receive suitable diagnoses and prescriptions to alleviate withdrawal symptoms and other mental health issues to facilitate successful detoxification (Narcotics Division, 2023). In the biopsychosocial model of treatment, social workers assess the physiological, psychological, and social aspects of drug abusers, as well as their relationships with drugs, so that social workers can assess the impact of drugs and develop treatment plans for the users. Social workers, nurses, and peer counsellors at the centres also provide individual and group counselling, family counselling, and wellness activities.

To maximise the coverage of services, substance abuse counselling centres are allocated across different districts in Hong Kong. The Tung Wah Group of Hospitals is responsible for clients from Hong Kong Island and operates two counselling centres: the Tung Wah Group

Hospital CROSS Centre and another centre (Tung Wah Group Hospital, 2023). Meanwhile, the Hong Kong Christian Service (2023) operates two centres in high-density locations of West Kowloon: Tsim Sha Tsui and Sham Shui Po. Kowloon East only has one counselling centre in Kwun Tong, operated by the Hong Kong Lutheran Social Service (2023).

Due to the large area of New Territories, the remaining 6 counselling centres are all located there. The Hong Kong Lutheran Social Service (2023) has two other counselling centres in Tseung Kwan O and Sheung Shu. The Hong Kong Children and Youth Services (n.d.) serves in Tsuen Wan, The Caritas HUGS Centre (2023) serves in Tuen Mun, the Enlighten Centre of Evangelical Lutheran Church Social Service – Hong Kong (2023) serves in Yuen Long, and the Hong Kong Sheng Kung Hui Welfare Council Neo-Horizon serves in Sha Tin.

All of these centres welcome both men and women who suffer from drug-induced mental issues. The length of services is generally longer than residential treatment programs, varying from three months to three years.

In addition to the medical care, referral services, and counselling services mentioned earlier, these centres also provide education and training to prevent substance use and relapse. The counselling centres are passive in nature that have to wait for the clients. These organisations conduct outreach services, including holding activities and education sessions in the community and schools, to approach and identify potential clients. The centres also value the family element in the rehabilitation journey and offer family consultation and emotional support to reinforce abstinence. To build supportive peer networks, the Hong Kong Children and Youth Services - Sane Centre (n.d.) and Hong Kong Sheng Kung Hui Welfare Council Neo-Horizon (n.d.) promote therapeutic and rehabilitation support groups to strengthen protective factors.

Unlike other centres, the Hong Kong Children and Youth Services - Sane Centre specifically covers their services for people who are early discharged from self-financing residential drug treatment and rehabilitation centres, as well as cross-border drug abusers (Hong Kong Children and Youth Services - Sane Centre, n.d.).

Tiu et al. (2020) conducted an effectiveness study and found that these centres provide effective services that cater to the needs of their clients. Particularly, individual counselling services were identified as a crucial component in promoting abstinence and facilitating emotional expression (Tiu et al. (2020). The non-judgemental, trustworthy, and honest

relationship between social workers and the clients construct a better understanding of the client's emotions and provides tailored care for them (Tiu et al., 2020).

Moreover, group activities were found to be beneficial, enhancing clients' sense of belonging and inspiring them to assist their peers. Prior to joining the centres, many clients experienced low self-esteem and negative mindsets, believing addiction was deterministic. However, the opportunity to interact with peers and engage in mutual aid instilled a desire to remain abstinent and act as role models for their peers.

Caritas Lok Heep Club operates two drug counselling centres that serve all types of substance abusers, with a focus on family intervention and trauma work. These centres aim to promote physical and mental healing, harness family strengths, and enable individuals to deal with drug problems more effectively. The services target users of anaesthetic analgesics or psychotropic substances and also provide support for family members of drug abusers. The services offered include psychoeducation, individual and group counselling, family therapy and support, peer work, trauma work, and interest groups (Caritas Lok Heep Club, 2023).

E)   Substance Abuse Clinics

Seven service clusters of the Hospital Authority operate nine substance abuse clinics (SACs) that offer services to individuals who have been referred by counselling centres, NGOs, other healthcare institutions, or those who seek treatment directly. These SACs adopt an integrated approach to treatment, utilising both medical and biopsychosocial models to provide a comprehensive range of services such as detoxification, counselling, and psychological therapy (Narcotics Division, 2023).

The SACs are strategically located across different districts and cater to varying types of substance abusers. While five of the SACs focus exclusively on treating psychotropic substance abusers, the remaining four provide treatment for both opiate narcotics and psychotropic substance abusers. The services offered by these SACs include pharmacological treatment, social work services, religious services, and occupational therapy. Notably, Castle Peak Hospital (2023) goes above and beyond by offering self-help groups and community education as part of its services.

14.4. Stage 4: Relapse

Attaining successful outcomes in drug rehabilitation is never guaranteed. The findings from studies with follow-ups of 2 years or more, as cited by Dennis et al. (2003) and McKay & Weiss (2001), highlight the challenging nature of addiction treatment, with 25-50% of participants experiencing relapse and alternating periods of abstinence and heavy drug use despite receiving treatment. Researchers have further estimated that the relapse rate could reach and even exceed 60% after treatment (Bowen et al., 2009; Bowen et al., 2015). The highest risk of relapse occurs within the first years after discharge, with the risk of relapse allayed until 4 to 5 years of abstinence, remaining stably low across the lifespan (Bowen et al., 2014; Chung & Maisto, 2006; Dennis et al., 2003).

However, the definition of relapse varied across studies, making the assessment difficult (Hser et al., 2007). Relapse can take on two forms: 1) the return to use of a specific drug or the use of a drug to substitute for a previously used primary drug or the development of new patterns of use; and 2) it can be defined as a return to substance abuse or problematic substance use after a period of abstinence or recovery, including a return to previous levels of use or more severe and harmful substance use (Breslin et al., 2002; Chung & Maisto, 2006; Hser et al., 2007). In either case, relapse represents a significant obstacle to long-term sobriety and can be a setback in the recovery process.

Various factors contribute to relapse, including lack of family and social support, negative affect, positive emotions while interacting with others, and the urge to use drugs, mediated by personal expectancies about substances and abilities to cope with situations (Breslin et al., 2002; Hser et al., 2007; Witkiewitz & Bowen, 2010). Given the ubiquity of negative affect, the discussion and treatment should not merely focus on negative emotions but rather on the triggers and roots of those conditioned associations to drug use and avoidance coping strategies (Breslin et al., 2002). Poor coping resources of an individual also count as a risk situation, leading to problematic use of addictive substances (Sinha, 2001).

The treatment journey is often a cyclical process, suggesting that treatment is a repetitive process until abstinence is achieved (Anglin et al., 1996). Focusing solely on achieving a certain length of abstinence, such as 6 months, 1 year, or 3 years following treatment, can lead to a misleading success rate for treatment programs (Hser et al., 2007). This is because the majority of treatment programs use abstinence length as the primary measure of success. Due to false perceptions about the benefits of drugs, social circles, accessibility, and temporary cures (Cheung et al., 2011; Laidler et al., 2004; Sung, 2001), it is extremely difficult to completely

cease the role of drugs in a person's life. Therefore, a growing number of experts proposed substance abuse as a chronic disorder (Dennis et al., 2003).

There is a tendency among neurobiologists to explain relapse in terms of brain functions, hormones, and neurotransmitters (Perry & Carroll, 2008; Stewart, 2000). However, the social stigma associated with drug addiction often impedes the success of treatment, with significant others being a major source of stigmatisation (Birtel et al., 2017). This stigma can be a significant contributing factor to relapse (Chie et al., 2015). People can never be abstinent if they cannot handle the persistent craving and urge to use drugs (Stewart, 2000). The factors that influence treatment outcomes and relapse are numerous and complex, including negative affect, craving or urges, motivation, self-efficacy, the history of abuse, pre-treatment conditions, marital and family factors, and contextual and interpersonal factors (Walitzer & Dearing, 2006; Witkiewitz & Bowen, 2010).

It is noteworthy that the interrelationships among the factors contributing to relapse are intricate and dynamic; thus, conjecturing immediate precipitants for relapse cannot provide a definitive explanation (McKay et al., 2006). The following content demonstrated common factors leading to relapse in the journey of rehabilitation, but they may only serve as a foundation to understand relapse better.

6.4.1. Low Self-Efficacy

One of the most significant and consistent factors that can influence the rate of relapse among drug addicts is the lack of self-efficacy (Abdollahi et al., 2014; Kadden & Litt, 2011). High self-efficacy empowers the person to adopt healthy behaviours and quit harmful acts, such as inhibiting the craving for substance abuse (Abdollahi et al., 2014; Chavarria et al., 2012; Tate et al., 2008). Longer periods of abstinence can increase self-efficacy, which in turn can serve as a predictor of the duration of future abstinence (Kadden & Litt, 2011; Tate et al., 2008).

Apart from the ability of self-regulation, self-efficacy is believed to be a component of coping skills and responses, and greater self-efficacy predicts better treatment outcomes since these individuals can handle risky situations without using drugs to avoid relapse (Kadden & Litt, 2011; McKay et al., 2006; Walitzer & Dearing, 2006). A highly self-efficacy person is more capable of responding effectively in a high-risk situation in terms of reducing threats, solving problems and modulating emotions, which consolidate confidence in abstinence (Breslin et al., 2002; Sinha, 2001; Tate et al., 2008). In contrast, low self-efficacy is associated

with a lack of job and self-sufficiency skills, predicting a higher risk of relapse (Chie et al., 2015). Self-efficacy may be a valuable factor in achieving early abstinence, as the mediation analysis did not find that the relationship between treatment involvement and subsequent outcomes was explained by self-efficacy (McKay et al., 2006).

A focus group study conducted by The Hong Kong Council of Social Service (2000) recognised that about 70% of the risk of relapse is due to psychological factors. Cheung et al. (2003) found that having high self-efficacy is paramount to avoid relapsing into drug use after receiving appropriate treatment. Self-efficacy is defined as the drug abusers' resilience against drug-taking behaviours in a high-risk environment (Cheung et al., 2003). Their study highlighted that the "ability to stay firm" is imperative, and there is a need "to be able to say 'no' to yourselves for 100% of all the tempting situations" (Cheung et al., 2003, p. 69). However, the researchers point out the difference between perceived self-efficacy and actual self-efficacy. They suggest that when the two are incongruent with one another, the consequences appear to be detrimental to the drug abusers' road to abstinence (Cheung et al., 2003). Thus, this demonstrates that without having a continuous and intrinsic determination to resist the temptation of drug-taking, relapse is likely to occur.

6.4.2. Dysfunctional Social Circles

Individuals who come from dysfunctional families, such as those having abusive parents, family conflicts, emotional distance, mistrust, low cohesiveness, and lack of intimacy, often demonstrated a lower rate of positive treatment outcomes and lower level of self-efficacy (Lavee & Altus, 2001; Pettersen et al., 2019; Stevens et al., 2015). A lack of family support is believed to be a leading cause of relapse, as those individuals may seek support from peers who are still using drugs (Chie et al., 2015).

Social and interpersonal concerns are also a common reason for relapse, especially in social gatherings with drug-using individuals (Breslin et al., 2002: Chung & Maisto, 2006; McKay et al., 2006). Drug abusers often find themselves in a social circle where most of their peers are also drug addicts, making it difficult for them to socialise with non-drug-using peers after completing rehabilitative treatment (Cheung et al., 2003). This can lead to re-associating with drug-using friends, which is a recipe for relapse. The lack of non-drug-using peers can prevent rehabilitated addicts from re-learning normal life values and developing an acceptable lifestyle. Socialising with non-drug-using peers post-treatment can act as an informal form of social control, indirectly policing the rehabilitated addict's behaviour and preventing them from

relapsing (Cheung et al., 2003).

Although therapeutic communities and self-help groups provide a shield from relapse, the negative influence of heavy drug abusers can outweigh the protective influence of network members who are abstinent (Binswanger et al., 2012; Ellis et al., 2004). The prevalence of substances, drug trafficking, and peer pressure to "party" in their living environments can make it challenging to avoid exposure and temptation, posing significant challenges for individuals in addiction recovery (Binswanger et al., 2012). In fact, the relapse rate among individuals who associate with friends involved in negative activities can be 3.5 times higher than those who do not, suggesting the need to improve the quality of social networks to sustain abstinence (Ellis et al., 2004; Pettersen et al., 2019).

Research has identified that certain social situations and experiences can increase the risk of substance abuse and relapse. Social pressure and impulsivity are associated with a pleasant time during social gatherings, which can predict a higher risk of relapse (Breslin et al., 2002). Additionally, Burleson and Kaminer (2005) explained the situation with a low self-efficacy that the failure to resist the lure of positive affect in these situations is a stronger predictor of substance abuse than negative affect. Similarly, McKay et al. (2006) found that individuals who spend time with high-risk situations or sexual partners are more likely to be tempted to abuse substances compared to those who spend more time with ordinary friends and relatives. Discharged desisting individuals reported drug trafficking in the environment as the major threat to their abstinence (Binswanger et al., 2012). The moods and experiences encountered in these situations can act as triggers for drug use, leading to dysfunctional inhibition control (McKay et al., 2006).

On the opposite to socially active, heroin addicts often become increasingly isolated and experience a drop in self-efficacy as a result of frustration and social withdrawal (Sheikh & Bashir, 2004). These individuals may also face social stigmas that can lead to feelings of inferiority and humiliation, which may further reinforce drug use as a coping mechanism (Sheikh & Bashir, 2004). Therefore, either being active in social circles containing drug-using peers or being socially isolated can pose threats to abstinence.

6.4.3. Dropout from Treatment and Post-Treatment Overdose

Drug abusers who find themselves dropping out of addiction treatment face a higher likelihood of relapse (Brorson et al., 2013). Apart from that, some people reported that helping

professionals lacked training and experience, making harassing or insensitive comments to clients (Najavits, 2009). Furthermore, long-term treatments cause a heavy financial burden to abusers, leading to a high treatment dropout rate (Najavits, 2009). Dropout individuals are more vulnerable to relapse than those who did not receive any treatment (McMurran, 2007).

Zhang et al. (2020) suggest that cognitive impairments caused by drug abuse were predictive of whether the drug addicts completed the treatment course. Drug addicts that had more severe cognitive impairments were more likely to drop out of their treatment (Zhang et al., 2020), a finding consistent with another international study (Brorson et al., 2013). Examining more closely, Zhang et al. (2020) found that executive dysfunction was predictive of treatment retention as well as the likelihood of relapse following a treatment drop-out. In contrast, the completion of treatment predicts better executive functioning (Man, 2015). Given that executive functioning is associated with making correct decisions, the researchers suggest that such impairment leads drug addicts impulsively drop out of treatment procedures and return to their habitual drug use (Perry & Carroll, 2008; Zhang et al., 2020).

Leaving the treatment setting can be a high-risk factor leading to relapse due to the underestimation of restored tolerance to drugs, intensified potency of street drugs over the years, and intentional overdose to end the stressful life during the transition (Binswanger et al., 2012). The pervasive environmental stimuli make individuals difficult to succeed at maintaining sobriety upon re-entry (Binswanger et al., 2012).

6.4.4. Mental and Emotional Issues

Chronic substance abuse makes a person vulnerable to mental illnesses and emotional disorders, which in turn can weaken the effectiveness of treatment and increase the risk of relapse (Breslin et al., 2002; Greenfield et al., 2010; Höijer et al., 2020; Latimer et al., 2004; McKay & Weiss, 2001; McMahon, 2001; Witkiewitz & Bowen, 2010). Traumatic events in early life can further exacerbate this relationship (Dass-Brailsford & Myrick, 2010). This relationship also explains why mental illnesses often co-occur with substance abuse, with more than 50% of individuals with substance abuse disorders also experiencing mental illnesses (Sinha, 2001; Tate et al., 2008).

Depression and anxiety are common among individuals in recovery and are associated with substance abuse and relapse (May et al., 2015; Wojciechowski, 2020b). Particularly, individuals with a history of victimisation are at a higher risk of developing anxiety and post-

traumatic stress disorder, which can lead to continued substance dependency (Wojciechowski, 2020b). This co-occurrence of mental illnesses can be attributed to the alteration of cortisol levels, leading to externalised pathologies such as conduct problems and substance abuse cravings (Sampedro-Piquero et al., 2020; Sinha, 2001).

Additionally, mental health issues can weaken supportive networks by discouraging individuals from forming relationships with others, making it more difficult for them to access the social resources necessary to maintain abstinence and prevent relapse (Ellis et al., 2004). Individuals with detached personalities are particularly vulnerable to relapse due to their lack of coping skills and dysphoric affect on social communication (McMahon, 2001). Additionally, antisocial personality disorder and borderline personality disorder are prevalent among substance abusers and have a negative relationship with relapse (Bradizza et al., 2006). Lower social participation and more confrontational attitudes and behaviours result in a higher risk of relapse.

Rahman et al. (2016) suggest that negative affect may have a greater impact on relapse than social factors. For individuals with addiction, the relationship between craving and negative affect can create a vicious cycle, where "increased depressive symptoms heighten their motivation to seek relief through substance use, and consequently intensify their craving" (Witkiewitz & Bowen, 2010, p.2). This can be further exacerbated by the "rebound" effect of depression, which amplifies drug-related thoughts and memory activation (Breslin et al., 2002). As a result, depression can hinder the application of coping skills and the development of self-efficacy because it leads individuals to believe that they are incapable of executing coping strategies (Kadden & Litt, 2011; Tate et al., 2008).

Furthermore, individuals with mental and emotional issues may be at risk of self-medication to cope with negative affect related to interpersonal and family problems, which can increase their vulnerability to addiction (Latimer et al., 2004; Sinha, 2007). Therefore, incorporating mental health and aftercare into substance abuse treatments may improve treatment outcomes (de Andrade, 2019).

Meanwhile, Chan et al. (2020) found that substance abusers seeking medical care demonstrated one or more comorbidities, such as mental disorders, suicidal attempts, self-inflicted injury, and cardiovascular and gastrointestinal diseases. Compared to non-substance abusers, substance abusers had a significantly higher frequency of A&E services and

hospitalisation, as well as longer days in the hospital (Chan et al., 2020). However, many types of mood disorders, personality disorders and mental illness have a high correlation with substance abuse and relapse, but yet significantly proven (Bradizza et al., 2006).

6.4.5. Gender Influences on Relapse

Gender differences may play a role in the probability of relapse. Greenfield et al. (2010) suggest that variances in neuroactive gonadal steroid hormones, cortisol levels, and hypothalamic-pituitary-adrenal (HPA) activity between males and females generate distinct patterns of substance abuse in the two genders.

Studies found that males were more likely to relapse than females but also demonstrated better resilience to relapse when it occurs (McKay & Weiss, 2001; Walitzer & Dearing, 2006). Also, males exhibit greater awareness of drug abuse issues due to a higher proportion of male drug abusers who tend to experiment with new psychoactive substances and use recreational drugs, as compared to female drug abusers (Chie et al., 2015). Although females tend to use smaller amounts of substances for a shorter duration of time, they experience more severe medical, behavioural, psychological, and social problems (Greenfield et al., 2010). Perry & Carroll (2008) suggest that while cultural factors may give men a greater opportunity for initial drug use, women who initiate drug use may be more prone to transitioning into continued abuse, escalating drug intake, and exhibiting binge-like patterns. Female abusers may also hoard unused drugs and use additional substances to reinforce the drug effects (Greenfield et al., 2011), making their drug-taking behaviours more permanent and harder to abstain from than males (Perry & Carroll, 2008).

According to Walitzer and Dearing (2006) and Lee et al. (2020), females are more susceptible to relapse when confronted with negative affect and interpersonal problems. Although many women stop abusing substances during pregnancy, relapse is commonly found during the first few months after delivery (Forray et al., 2015). The situation can be much worse in the presence of a male intimate partner who uses drugs, regardless of the quality of the relationship (Ellis et al., 2004; Greenfield et al., 2011; Lee et al., 2020). Hence, couple treatments are more beneficial to females than individual-based treatments (Greenfield et al., 2011). In addition, research has suggested that female drug use is more commonly associated with emotional problems and disorders (Chie et al., 2015). They experience more intense feelings of shame and guilt in the context of social relationships, presenting as impediments to seeking treatment (Ellis et al., 2004; Greenfield et al., 2011). As such, there is a greater need

for services that can assist females in building supportive social networks (Chie et al., 2015). For instance, the Trauma Recovery and Empowerment Model, which is designed for female users with psychological trauma, particularly emphasises peer support groups in addition to the treatment focuses (Dass-Brailsford & Myrick, 2010; Najavits, 2009). In contrast, male abusers tend to rely more on social and personal resources, such as supportive relationships with family and friends and a stable living environment, to maintain their abstinence (Ellis et al., 2004).

Despite research suggesting that females are more susceptible to relapse when faced with negative affect and interpersonal problems, the treatment effect for females remains inconclusive (Walitzer & Dearing, 2006). Furthermore, there is no evidence to suggest that lower relapse rates among females are associated with pre-treatment drug use or severity, treatment programs, or levels of social support (Walitzer & Dearing, 2006). However, attending more group counselling sessions may contribute to a lower relapse rate among females (Walitzer & Dearing, 2006). Conversely, low attendance in self-help programs predicted high relapse rates for both genders (McKay et al., 2006).

For existing evidence, females may need to have treatment in a different array of services than males, contributing to a lower relapse rate (Belenko & Peugh, 2005; Walitzer & Dearing, 2006). However, most aspects of gender differences in drug abuse do not reach statistically significant, suggesting inconclusive results (Chie et al., 2015; Perry & Carroll, 2008). Gender differences may vary between different regions, highlighting the need for local research to better understand the situation in each area (Chie et al., 2015).

6.4.6. Stress

Many addiction treatment programs include stress management interventions as a way to improve coping skills in high-risk situations (Tate et al., 2008). Chronic stressors, in particular, require intensive and protracted efforts to prevent relapse (Tate et al., 2008). This is because stress is often associated with relapse, as it triggers the brain's reward circuit and pleasant memories of drug use, reducing one's ability to effectively manage high-risk situations (Sinha, 2001).

Neuroscience research suggests that stress and drug cue-related cravings and compulsions should be assessed in a clinical context to identify and assess relapse propensity (Sinha, 2007). When substance abusers are exposed to stress, their stress response system, the HPA axis, releases more adrenocorticotropic hormones, cortisol, and prolactin (Sampedro-

Piquero et al., 2020; Sinha, 2007). Stress, activation of the HPA axis, cortisol levels, and substance abuse are interconnected in a vicious cycle (Sampedro-Piquero et al., 2020).

Abusing substances to cope with stress can lead to increased compulsive drug use and a greater risk of relapse. Additionally, the activation of the HPA axis can release more cortisol, which may further drive substance abuse. A state of hyperresponsive distress has been identified in early abstinence, which can make substance abusers more susceptible to compulsive drug seeking (Sampedro-Piquero et al., 2020; Sinha, 2007). This can be attributed to changes in the brain caused by chronic drug use, which disable the recovery and return of the aroused responses to baseline (Sinha, 2007).

Furthermore, unlike healthy individuals, substance abusers have little to no brain activity in areas that help regulate emotions during stress (Sinha, 2007). This suggests that addiction can impact the way the brain responds to stress and emotions, making it more challenging for individuals to cope with stressful situations without turning to drugs (Sinha, 2007).

Stress also has a significant negative impact on individuals with substance dependence and emotional disorders, as it has been linked to the recurrence of depressive episodes and triggering relapse (Tate et al., 2008).

Working professionals, such as social workers, doctors, and nurses, are exposed to an equal risk of drug use due to the urge to relax and deal with punishing work schedules (Chie et al., 2015). Also, the vulnerability to stress-induced drug use is much higher in those individuals with prior drug use experiences (Stewart, 2000).

Although individuals may learn coping skills in treatment, research has shown that they may fail to perform them effectively in stressful circumstances as the coping reactivity of vulnerable individuals has been hindered by stress (Sinha, 2001). Therefore, youth should develop assertiveness skills that build self-confidence and reinforce the belief that their decisions are the right ones, along with coping skills to reduce the influence of peers and make independent and logical decisions to solve problems (Chie et al., 2015). Drug use could be a conditioned avoidant coping strategy to stress (especially for adolescent drug abusers), resulting in triggered craving and relapse when the person encounters either actual or imagery stress (Sinha, 2001).

6.4.7. Dysfunctional Brain Circuits

Substance abuse is a complex phenomenon that affects multiple brain circuits and networks, indicating that it involves a diverse range of neural processes and systems, which can result in dysfunctional brain circuits and cognitive deficits (Hill-Bowen et al., 2021; Zhao et al., 2020). Chronic or excessive substance use can lead to neurocognitive impairments, which can significantly contribute to relapse after a period of abstinence (Schulte et al., 2014; Zhao et al., 2020).

Hill-Bowen et al. (2021) have discussed the role of dysregulated affective neurocircuitry in the development and maintenance of substance use. Specifically, the amygdala is linked to aversive emotional states underlying withdrawal, which can motivate the compulsive seeking and taking of drugs through negative reinforcement (Hill-Bowen et al., 2021). Additionally, both the amygdala and OFC are involved in drug-related aversive behaviours and are activated when encountering drug-associated stimuli such as people, places, and objects, suggesting that affective-related neurocircuitry can contribute to both positive and negative reinforcement mechanisms that perpetuate drug use (Hill-Bowen et al., 2021).

Re-exposure to drugs is viewed as the most effective event for relapse, especially when accompanied by peer stress, which activates multiple brain pathways associated with drug abuse (McKay et al., 2006; Stewart, 2000). Certain areas of the brain, including the cingulate cortex, striatum, and amygdala, are involved in overreacting to stress and drug cues, leading to higher drug cravings (Sinha, 2007). Empirical evidence has documented significant dysregulation in the HPA axis, automatic nervous system changes, and alterations in the dopaminergic, emotional, and motivational brain systems of substance abusers (Sampedro-Piquero et al., 2020; Sinha, 2007). Abusing substances has already altered cortisol levels, brain stress and reward circuits, and dopamine release (Hill-Bowen et al., 2021; Sinha, 2001).

During early abstinence, individuals may experience symptoms such as irritability, anxiety, emotional distress, insomnia, dysphoria, aggression, and cravings, which have been associated with neuroadaptations (Sinha, 2007). The inhibitory control in an individual's brain gradually loses its function to regulate behaviours and impulses while incorporating the conditioned avoidant coping strategy, and the limbic structures, such as the amygdala and ventral striatum, become more reactive to drug use (McKay et al., 2006).

Disruptions in dopamine function, prefrontal cortical dysfunction, stress reactivity, conditioned cues, and attentional biases to substance-related stimuli appear to be associated

with relapse, although addiction in neuroscience research is complex and sometimes inconclusive (McKay et al., 2006). The presence of substance cues is indisputably correlated to the craving for substance use, which is intensified along with stress (Hill-Bowen et al., 2021; McKay et al., 2006).

Addiction in neuroscience research is complex and sometimes inconclusive. Nevertheless, disruptions in dopamine function, prefrontal cortical dysfunction, stress reactivity, conditioned cues, and attentional biases to substance-related stimuli appear to be associated with relapse (McKay et al., 2006).

14.5. Stage 5: Desistance

Desistance from drug use is a challenging process that requires conceptualising the time frame and end state, similar to desistance from crime (Hser et al., 2007). Achieving complete abstinence from drug use is difficult, and individuals often struggle with treatment, relapse, and abstinence before successfully desisting. However, determining the success of desistance is challenging since it's not possible to determine a long enough follow-up period to confirm permanent abstinence (Hser et al., 2007). Some researchers have defined desistance from drug use as reductions in frequency and amount instead of cessation or abstinence (Hser et al., 2007). Therefore, we applied desisting individuals to describe those former abusers who stopped to use substances, while desistance and abstinence are used interchangeably in the discussion.

While receiving more treatment may lead to incremental improvements for those ready for change, it's important not to categorise individuals as failures based on a few unsuccessful treatment attempts (Anglin et al., 1996; Dennis et al., 2005). Instead, it's essential to recognise that those who have received prior treatment may be more ready for change and benefit from additional support (Anglin et al., 1996). However, the cumulative treatment effect requires more empirical evidence (Hser et al., 2007).

Apart from desistance after treatment, Hser et al. (2007) found that marijuana and methamphetamine users demonstrated a downward trend in weekly use with increasing age, while cocaine and heroin users had a gradual upward trend due to the "history" effect of drug use. Additionally, a longer abstinence period predicted a lower possibility of relapse (Hser et al., 2007). Despite the challenges in achieving and measuring desistance from drug use, understanding the factors that contribute to successful desistance is crucial for developing effective treatment and support programs. In this section, we explore the current literature on

drug desistance.

6.5.1. Motivation Enhancement

Motivation enhancement is an important component to achieving desistance from drugs, as youths may turn to drugs due to misconceptions about the functions of drugs (Laidler et al., 2004; Cheung et al., 2011). Being able to perceive harm caused to oneself and loved ones boosts the motivation to desistance, being the strongest predictor of successful abstinence (Laudet & Stanick, 2010). Motivation, in turn, foster self-efficacy, which predicts lower risks of depression and better well-being (May et al., 2015). Self-efficacy, religion, and social networks are motivators for people to stay in a drug-free life (May et al., 2015).

To develop strong motivation, adolescents need to learn in-depth knowledge about drug abuse causes, consequences, and effects to resist the temptations of recreational use, correct false perceptions, and make rational decisions (Chie et al., 2015). Interactive learning, such as field visits, mentorship, and sharing experiences of former drug abusers, social workers, and agencies, can better enhance motivation for youth to resist drug abuse, compared to traditional teaching styles to promote drug knowledge (Chie et al., 2015). It has been suggested that one of the reasons why youths turn to drugs in the first place is because of misconceptions (Laidler et al., 2004; Cheung et al., 2011). Letting them experience the real-life struggles of drug abusers, including the impact on families and the physical and mental challenges of treatment, motivated students to avoid drug use (Chie et al., 2015).

Cheung et al. (2011) found that cognitive-behavioural integrated therapy (CBIT) can effectively dissipate youth's misconceptions about psychotropic substance use to promote desistance. Compared to conventional therapeutic techniques, the CBIT was effective in reducing pro-drug misconceptions and led to a sustained reduction in drug misconceptions in youths (Cheung et al., 2011). The success of the CBIT in altering youths' perceptions about drugs highlights the importance of changing misconceived beliefs about drug use as a key stage for youths to desist from drug use (Cheung et al., 2011).

Moreover, the loss of loved ones who struggled with drug addiction, as well as the responsibility of caring for children, can serve as powerful motivators for individuals to overcome their addiction (Hser et al., 2007). Motivation enhancement programs can help individuals develop the necessary skills and beliefs to maintain a drug-free life, and the success of these programs depends on the individual's willingness to change and the availability of

support systems (Laudet & Stanick, 2010). Therefore, to turn away from drugs, motivation constructs are the key to maintaining a drug-free life (Laudet & Stanick, 2010).

6.5.2. Therapeutic Community

Merely possessing strong willpower does not necessarily lead to better recovery from substance use, as the outcome is influenced by environmental and relational factors (Pettersen et al., 2019). The most frequently reported reasons for abstaining from substance abuse were peer influences and stable social relationships (Pettersen et al., 2018). Due to the lack of serious and immediate consequences of drug use or relapse serving as a driving force to abuse substances, the development of a therapeutic community hardens substance abuse by strengthening reciprocity and social capital, including close relationships (McKay et al., 2006; Nixon, 2020).

The therapeutic community approach regards the community as the primary driver of positive change, emphasising the importance of mutual support, behavioural accountability, and shared values in promoting a healthy way of life (Winters et al., 2018). Giordano et al. (2002) called these relational resources 'hook for change' to facilitate identity transformation. Ellis et al. (2004) and Pettersen et al. (2019) pointed out that health and good social networks consolidate abstinence status.

Apart from an individual's strong willpower and motivation, successful desisters were also influenced by social networks and environmental and relational factors that supported their desired changes (Hser et al., 2007; Pettersen et al., 2019). To overcome addiction, individuals can adopt alternative activities, including religion, study, and volunteerism, and establish or restore relationships with family and friends so as to sustain abstinence (Hser et al., 2007). As social bonds strengthen, the attachment to substance use weakens (Pettersen et al., 2019).

Having a strong support system that includes non-judgmental guidance and advice from healthcare professionals is crucial in motivating young individuals who use drugs to seek help (Chie et al., 2015). Instead of seeking temporary relief through drugs, confronting the issue directly and working with a counsellor can lead to finding a more sustainable abstinence (Chie et al., 2015). With the proper guidance in the correctional institutions, treatment centres and community, the desisting individuals can be empowered and encouraged to contribute back to the community. Some may even turn out to be role models to inspire others (Nixon, 2020). Hence, the identity transformation is facilitated by allowing these individuals to see themselves

as more than a 'drug user' (Nixon, 2020).

6.5.3. Anti-Drug Announcements in the Public Interest

Research has also demonstrated that anti-drug announcements in the public interest (API) play a critical role in informing youths about dangerous drug-use behaviours and promoting desistance (Wong & Cuklanz, 2000). Wong and Cuklanz (2000) found that tailored APIs that target youths and parents separately are even more effective in preventing drug use by allowing a more holistic response to the drug-use problem. For example, young people may be encouraged to resist peer pressure and make informed decisions. The use of upbeat APIs that emphasised a sense of hope and group cohesion was effective in preventing younger audiences from turning to drugs (Wong & Cuklanz, 2000). APIs that demonstrated how to respond to or resist the social pressures of taking drugs were appreciated by ex-drug abusers and were thought to be informative for at-risk users (Wong & Cuklanz, 2000). Positive APIs allow youngsters to establish pro-social values and attitudes that play a key role in desisting from drug use (Wong & Cuklanz, 2000). Given that peer influences the adolescent's drug abuse, the APIs can help with desistance from drugs by providing examples of ways to deal with social pressures.

In response to the drug abuse situation in Hong Kong, several programs have been developed to promote desistance. Shek et al. (2003) developed Project Astro MIND, which uses psychosocial primary prevention techniques with a focus on resisting peer and social influences on drug-use behaviours. Participants felt that they came out of Project Astro MIND with a greater understanding of drugs, a heightened drug-refusal attitude, and improved social skills (Shek et al., 2003). The program participants were more likely to perform better when it came to drug refusal and social skills than youths who did not participate in the program (Shek et al., 2003). The workers delivering the program also felt satisfied that it helped the youths develop a more positive outlook on life and an increased knowledge of substance abuse and sex (Shek et al., 2003). The increased knowledge gained from the program may help youths make more informed decisions when they encounter illicit drugs or sex. The program also had the ability to negate the risk-taking behaviours prevalent in adolescents, as even the more rebellious students who completed the program became more docile in nature (Shek et al., 2003). Participants perceived themselves to be psychologically closer to their "ideal self" since joining the program and were more likely to identify themselves as a "successful person" following their time in the program (Shek et al., 2003). This change in mindset played a crucial role in the success of their desistance from drugs.

6.5.4. Law Enforcement Efforts

Law enforcement strategies have also contributed to drug abusers' desistance from drugs. In a study by Zhong et al. (2017), cross-border drug use between Hong Kong and the Mainland was examined. Their research surmised that a possible reason for the initial displacement of drug use from Hong Kong to the Mainland was because of the heightened drug crackdowns in hotspots around Hong Kong. Those individuals whose drug habits were interrupted by the crackdowns fled to the Mainland, where there was less surveillance over drug-taking behaviours, a surge in entertainment venues and a cheaper supply of drugs (Zhong et al., 2017). When Hong Kong and Mainland law enforcement stepped up their crackdowns and sanctions as a response to the deteriorating drug abuse situation, there was a decline in local and cross-border drug use (Zhong et al., 2017). This relationship is further supported by Hong Kong drug abusers' explanation that they no longer go to the Mainland to take drugs since all the drug hotspots have been shut down and the major entertainment venues have been transformed into small bars (Zhong et al., 2017). The analysis demonstrates that law enforcement actions against drug abuse behaviours and patterns across the Mainland and Hong Kong have a deterrent effect on cross-border drug abusers. They have become reluctant to use drugs across the border in fear of sanctions and rumours that spread about the severity of the sanctions, causing them to desist from cross-border drug use (Zhong et al., 2017).

6.5.5. Life Satisfaction

Life satisfaction is a key determinant of one's desistance against drugs and a predictor of one's drug use status. Rehabilitated addicts face a dilemma that directly impacts their satisfaction with life, leading them to relapse.

Studies demonstrate that drug abusers tend to have lower life satisfaction than their non-drug-using counterparts, given that their livelihoods were negatively impacted by their drug habit (Cheung et al., 2003; Cheung, 2012). When compared with those around them, the relative deprivation in the addicts' quality of life makes them feel they have failed (Cheung et al., 2003). Cheung et al. (2003) argue that this mental battle addicts face cause them to experience "anomie", describing the feeling of normlessness and triggering deviant behaviour.

Discharge from prison comes with various challenges, including inadequate housing, unemployment, psychosocial issues, and limited access to healthcare services (Binswanger et al., 2012). During temporary congregate housing for detoxification and sobriety, clients have to develop mental stability, a drug-free lifestyle, and life skills to live independently thereafter

(Padgett et al., 2011). Desisting people strive for better functioning, satisfying quality of life, and re-establishing meaningful and purposeful relationships with significant others (Pettersen et al., 2018).

Drug treatment that focuses on elevating drug abusers' life satisfaction may help encourage abstinence (Cheung & Lee, 2020). Given the cognitive discrepancy between the life of using drugs and the desisting life pushing them into a relapse (Cheung et al., 2003), providing vocational training or life planning during treatment can guide rehabilitated drug abusers on their journey of finding a suitable career path and increase their life satisfaction, empowering them and creating hope for a brighter future (Cheung & Lee, 2020).

6.5.6. Employment and Stability

Apart from social and relational factors, employment and income are substantial life issues affecting the desistance status because they provide structure and purpose in life for individuals in recovery (Cheung et al., 2003; Holtyn et al., 2020; Seraji et al., 2010, cited in Hosseini et al., 2014). However, most existing interventions have not adequately addressed employment needs in low-income adults, contributing to the failure of abstinence (Holtyn et al., 2020). While higher socioeconomic status does not necessarily result in better abstinence, unfulfilled economic and housing needs can place individuals at risk for relapse due to the frustration of blocked opportunities (Belenko & Peugh, 2005; Binswanger et al., 2012; Gibbs & Lytle, 2020).

Employment also takes over spare time, distracting the desisting individuals from thinking about drugs and providing a structured routine that is free of drugs (Cheung et al., 2003). However, employment opportunities are not always available for rehabilitated addicts, especially during times of economic hardship (Cheung et al., 2003). Additionally, a lack of educational attainment can prevent ex-drug abusers from performing in higher-level jobs, leading to discouragement (Siu et al., 2019).

Besides, another concern for living stability is housing. Housing issues after discharge can also contribute to the risk of relapse, as homelessness predicts a higher risk of desistance (Padgett et al., 2011). Securing employment and living stability can solidify desistance due to the regained resources and support (Padgett et al., 2011).

To counter this, vocational guidance can be provided to drug abusers, helping them find suitable jobs and promoting desistance from future drug abuse (Siu et al., 2019). Man (2015)

has found that desisting individuals who receive treatment demonstrate enhanced job skills and hold a more positive attitude towards unemployment, ensuring a more stable response to life adversities. Therefore, abstinence programs should implement an integrated model to meet the needs of individuals in recovery, including housing, legal services, and psychosocial counselling (Cepeda et al., 2020).

6.5.7. Health Condition

Health condition is a critical issue that affects the desistance status of drug abusers. Physical and mental health issues, combined with inadequate healthcare access, substance abuse, and intense emotional reactions, create complex challenges for individual's desistance (Binswanger et al., 2012).

Substance abuse is considered one of the leading causes of mortality and should be treated as a chronic disease (Scott et al., 2011). The presence of substance use has been linked to low rates of viral suppression, leading to higher morbidity and mortality rates and an increased risk of HIV transmission (Nance et al., 2020). HIV is easily transmitted through the sharing of needles or other injection equipment among people who inject drugs (PWID) (Cepeda et al., 2020; Nance et al., 2020). Addressing the issue of HIV transmission among PWID requires a comprehensive approach that addresses both the individual and structural factors that contribute to drug use and HIV risk (Cepeda et al., 2020).

More than the HIV issues, the desisting individuals also suffer from overdose mortality. In the weeks following release, overdose mortality rates among recently released prisoners can be up to 12 times higher than expected in similar demographic groups in the general population (Binswanger et al., 2012). Incarceration brings only temporary abstinence to abusers because their bodies and minds still crave drugs (Binswanger et al., 2012). Even intermittent abstinence and reduced frequency without abstinence lower the risk of mortality by suppressing viral loads (Scott et al.,2011; Nance et al., 2020).

15.   Influences of the COVID-19 Pandemic

The COVID-19 pandemic has had varying effects on drug markets. A previous study found that some drugs were more resilient to external forces than others (Bouchard, 2007). While the cannabis market in Australia remained relatively stable in terms of consumer demand and availability, the market for methamphetamine appears to have been negatively impacted.

Self-reported data from the DUMA program of the Australian Institute of Criminology showed that consumer demand for cannabis stayed relatively constant before and after the pandemic (Doherty et al., 2021). Cannabis users also reported that access to the drug remained readily available, with a slight, yet statistically insignificant, increase from pre-pandemic reports (Doherty et al., 2021). Additionally, there was no change in the number of drug dealers selling cannabis or the prices of cannabis after the COVID-19 outbreak (Doherty et al., 2021). Some cannabis users even reported mistakenly buying too much cannabis for fear that supplies would be reduced as a result of the pandemic (Doherty et al., 2021). These findings suggest that the cannabis market is adaptable to adverse economic events.

In contrast, the market for methamphetamine experienced a decrease in demand and accessibility. Self-reported data from the DUMA program showed that the rating for accessibility to methamphetamine dropped to 5 out of 10 from the usual 10 out of 10, indicating that it became much harder to obtain methamphetamine during the pandemic (Voce et al., 2021). The decrease in accessibility was also reported across Australia's major cities, suggesting that on the national level, the ease of access to methamphetamine has dwindled. What may explain this reduction in accessibility is the finding that the number of methamphetamine drug dealers has decreased following the pandemic (Voce et al., 2021). With fewer drug dealers selling the drug, access to the drug is sure to be affected. By virtue of the market forces of increased demand and reduced supply, the prices of methamphetamine have been reported to increase (Voce et al., 2021). The researchers reason that the travel restrictions and interruptions to the mailing system in Australia in order to curb COVID-19 cases may have prevented drug dealers from operating regularly, thus affecting the drug trafficking enterprise.

The uncertainties surrounding a global health pandemic give rise to increased drug use as a coping mechanism for negative affect (Australian Criminal Intelligence Commission, 2020; European Monitoring Centre for Drugs and Drug Addiction, 2020). Self-isolation is a significant predictor for increased cannabis use, whether or not the user consumed cannabis as

a coping mechanism (Bartel et al., 2020). Emerging research suggests that feelings of isolation and loneliness, triggered by the "stay-at-home" orders to curb the pandemic, are associated with heightened self-reported cannabis use, especially among those with poor mental health (Rotermann, 2020b). Using published self-reported data, Doherty et al. (2021) also found that there was an increased demand for cannabis in the Australian population among those struggling to cope with the negative emotions associated with the consequences of the pandemic. This is supported by a COVID-19 questionnaire and a cannabis use questionnaire administered to participants in an ongoing longitudinal study, which found that research participants who followed the mandated or recommended "stay-at-home" orders were consuming 20% more cannabis than participants who did not follow the orders (Bartel et al., 2020). Self-isolation is a significant predictor for increased cannabis use, whether or not the user consumed cannabis as a coping mechanism (Bartel et al., 2020). A number of participants highlighted that increased cannabis use was to cope with their depression during the pandemic (Bartel et al., 2020), aligning with past research demonstrating that cannabis use for coping purposes poses a risk for heavy cannabis use (Cooper et al., 2016).

Similar findings were reported in other studies, including a questionnaire carried out with Dutch cannabis users by van Laar et al. (2020) during the first wave of lockdown measures, which found that 41.3% of users reported consuming more cannabis than previously. Only 6.6% of questioned users reported consuming less than normal (van Laar et al., 2020). Of the participants who did not consume cannabis daily, 53.6% have increased their consumption, with 35.7% increasing their frequency of use to almost daily (van Laar et al., 2020). Boredom appeared to be the most common reason why cannabis users began consuming more cannabis. This suggests that for those who already habitually consume cannabis, increased usage following government-imposed lockdown measures to curb COVID-19 cases is likely attributed more towards reasons of having less to do during the day than mental health issues. The findings are also supported by a survey conducted by Statistics Canada on the Canadian population, which found that greater than one-third of cannabis users who consumed cannabis previously increased their usage since the start of the pandemic (Statistics Canada, 2021). Many attribute this rise in consumption to boredom and stress induced by the pandemic, as seen in the finding that 45% of those who increased usage reported "often" or "always" feeling a lack of companionship (Statistics Canada, 2021).

Overall, the COVID-19 pandemic has had varied effects on drug markets, with cannabis

remaining relatively stable while methamphetamine experienced a decrease in demand and accessibility. The pandemic has also been associated with increased cannabis use as a coping mechanism, with boredom and stress being the most commonly reported reasons for increased usage.

16. Insights from the Literature

16.1. Strengths of the Studies

The current review offers an insightful overview of the global understanding of diverse aspects of the drug abuse problem. The compilation of research conducted on populations from various countries sends a clear signal: hidden drug abuse, drug trafficking, and cannabis use are shared issues faced by nations globally. These problems are not confined to local contexts but are also major concerns on a global scale.

The consistency in empirical findings across studies conducted in different countries strengthens the validity of the results. Furthermore, the wide acceptance amongst international research bodies and the application of data triangulation enhance the reliability of these established findings. The reproducibility of the current findings underscores the specific areas that require attention from government task forces to mitigate local drug abuse situations.

Studying drug abuse issues is challenging due to the phenomenon of hidden drug abuse. However, the ability of current research to delve deeper into this issue highlights its importance to both the scientific community and society at large. The identification of gaps in the literature by researchers indicates potential areas for future research. These areas can be developed to better inform policymakers and law enforcement personnel on more effective strategies for addressing the drug abuse problem.

Moreover, most of the drug research studies included in this review are quantitative in nature. Incorporating qualitative research methods can yield detailed and influential data that can supplement and contextualise the quantitative statistical data.

16.2. Weaknesses of the Studies

Despite the contributions of the reviewed studies in advancing knowledge on underexplored areas of drug abuse, they are not exempt from criticisms. A significant number of studies depend on self-reported data, which can be subject to social desirability bias. Participants may modify their answers to portray a positive self-image or protect their reputation, resulting in a distorted depiction of the data.

Self-reported data also hinges on the honesty of participants, which may not always be guaranteed, especially considering the nature of drug use and abuse, as these crimes can lead

to serious legal repercussions. Furthermore, the interpretation of survey data and interview data is heavily reliant on the researcher's perspective. Therefore, such data may be vulnerable to researcher bias. The interpretation of the data may inadvertently align with the researcher's expectations, which could lead to a distorted or even exaggerated view of the available data.

A few studies reviewed in this paper have attempted to examine the impact of the COVID-19 pandemic on drug use habits and drug trafficking. While this is a commendable effort, the data on these pandemic impacts have only recently been published. The limited number of available studies reduces the potential for these studies to enhance their reliability through empirical support. As these are among the first studies on the impacts of the pandemic, there is some scepticism regarding the accuracy and generalizability of the conclusions. The issue of generalizability makes it unclear whether the results obtained from a sample of the population can be extrapolated to the world population as a whole. More studies are needed to confirm these findings and increase their generalizability.

16.3. Gap in Knowledge

Existing drug research has concentrated on three areas: hidden drug abuse, drug trafficking, and cannabis use. However, a systematic review reveals a dearth of substantial published research in the area of hidden drug abuse (Ravn & Duff, 2015). This issue may be labelled differently across countries, and minimal research has been conducted by official agencies in this area, leading to an unrepresentative depiction of the overall drug problem and limited data on drug use in private settings. This knowledge gap necessitates innovative approaches to access these populations and further research in these areas. The emerging new research in novel methods of studying hidden drug abuse (Ravn & Duff, 2015) suggests a direction for future research that can fill this gap in knowledge.

In addition, there is an urge for a more comprehensive research framework. Perry and Carroll (2008) emphasised the need to investigate early vulnerability factors (factors leading to the onset of drug abuse) to fill the knowledge gap instead of investing in new treatment models. Coherently, Hser et al. (2007) observed the complex interactions between drug abusers and a wide range of health and social service providers, leading to intertwined patterns of drug use. Hence, they also demanded a broadened framework is demanded from better theoretical development in fields to capture the chronic nature. Furthermore, Teruya and Hser (2010) also asked for a comprehensive, integrated, and systemic approach to understanding the complex

nature of drug abuse and its dynamic interactions with various factors.

To properly map the pattern, characteristics, and consequences of drug use, our research team has extended the cyclic process of recovery model by Anglin et al. (1996) to a five-stage research framework of the drug abuse journey. This model takes into account the diverse and multiple factors leading to the onset, persistence, treatment, relapse, and desistance of drug use.

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