Sexual Behaviour among Male Methamphetamine and Heroin Dependents Attending Drug Rehabilitation Clinic

CHAPTER ONE

Introduction

Bond cursed himself for an impulse that earlier in the day would have seemed unthinkable. Champagne and Benzedrine (amphetamine)- never again

Ian Fleming, 'Moonraker', 1955

"Sex" and "drugs" are two sensitive words which can make heads turn if spoken out from the usual social circles in a conservative country like Malaysia. These words are considered as a private and sensitive topic in someone's life. In a local study among Malaysian male youths by Low and colleagues (2007), the concept of sex was seen only within the context of marriage, and sex was seen as synonymous with love (1). The topic of sex is only discussed, if any, only with your close and intimate partner or partners, while mentioning drugs will suggest illicit substance use that is against the law and might lend a person in imprisonment. However, these topics are part and parcels of life as a human in a community thus there is no point in trying to hide, run away or avoid talking about them.

The drug problem in Malaysia is not a new one. It started in pre-independence and colonization days with the mushrooming of opium shops to cater for the drug needs of the

Chinese mining communities and was controlled largely by Chinese's clans. These clans monopolized the opium trades and used it as a tool to control the mining workers. The post-independence drug scenarios changed significantly in the 1970s with the widespread use of morphine and heroin largely in Malay communities alongside the onset of cultural change from the Western world that came with the modernization of Malaysia. However, after years of fights against morphine and heroin that consume a significant chunk of taxpayers' money, Malaysia is facing a new horizon of the drug problem- the emerging of amphetamine-type stimulants (ATS).

ATS is not really a new illicit substance but because of its prevalent use whether to increase energy and stamina for productivity, as an anorectic or merely as a drug to increase socialization, ATS abuse has become more widespread in Malaysia, especially in the clubs, night-life scenes and workplaces. The effects of being able to enjoy entertainments continuously and to continue working when high on ATS also provide opportunities for the energy to be channeled into sexual acts.

A study of a sample of crystal methamphetamine users in Sydney found that users reported benefits such as alertness, increased energy, aphrodisiac effects, sociability, euphoria and loss of inhibitions (2). These documented effects and other evidence supporting ATS as a good stimulant to provide more energy and confidence has resulted in the use of amphetamine and methamphetamine to be associated with sexual behaviour because it enhances sexual desire (3, 4). Participants reported sex while on amphetamine to be 'compulsive' and 'obsessive' with loss of control over their sexual expression (5). Methamphetamine users reported about enhanced libido, sexual desire, sense of sexual pleasure and longer duration of sexual intercourse (6).

On the other hand, heroin (and morphine) has been in the Malaysian drug scenes for decades and now have been considered as an old drug. However, the problems of heroin and morphine abuse and dependence are still wide-spread in Malaysia. Many users reported curiosity and influence from friends as the initial motives of drug use (6). The use of heroin has been implicated as one of the reasons for the rise in HIV rate, especially among intravenous drug users (IVDUs). This could be due to needle sharing or because of sexual behaviours among users who led to sexual impulsivity and ignorance of safe sex during the period of drug intoxication.

Majority of previous studies regarding sexual behaviour among ATS or heroin users concentrated more on risky sexual behaviour. Attentions on studies were given to those having high risk of contracting HIV and sexually transmitted diseases (STDs) such as intravenous drug users, men who have sex with men (MSM) and men who have sex with men and women (MSMW) (7-12). These studies mainly emphasized on types of sexual intercourse (oral, vaginal or anal), frequency of intercourse, use of protective measures against HIV and STDs and numbers and types of partners (regular or casual). There was only a handful of studies that assessed sexual behaviour among heterosexual ATS users but then again, these studies mainly reported on sexual risk behaviour (3, 13, 14). There is a dearth of study that mentions the relationship or association between ATS and heroin use with sexual functioning despite the clinical implications of this relationship. Relationships between ATS and heroin with sexual thoughts, feelings, behaviours, sexual drives, performance, sexual pleasure and satisfaction, involvement with unusual sexual acts and sexual perversion were not really explored. Apart from that, most of the previous studies were done in developed countries and major cities with large population of high-risk communities. Only a handful of studies was done in Asia and South-East Asian countries, for example, Thailand (15).

The current study will try to describe the influence of ATS and heroin on sexual behaviour in three Malaysian cities, especially in terms of general sexual behaviour rather than only focusing on high-risk sexual practice. It is hoped that the findings of this study can contribute useful material for a more refined drug rehabilitation programme in Malaysia. The findings can help the authority to focus on selected and important sexual topics related to drug use to be included in the rehabilitation programme.

CHAPTER TWO

LITERATURE REVIEW

It is more common these days to hear media reports regarding news related to amphetamine-type stimulants (ATS). These reports covered raids by drug-enforcement authorities on places manufacturing these substances, to the arrests of dealers, traffickers and users of these substances. A minority of media reports did take the effort to publish some of the common physical and psychological effects of amphetamine-type stimulants. This kind of media coverage was seldom heard in the past. However, with the progressive emergence of ATS in our society, we cannot run from facing the reality about the effects and consequences of ATS on individual and also the society.

2.1 Amphetamine-type stimulant (ATS)

What is the amphetamine-type stimulant? ATS is a big group comprising synthetically-manufactured central stimulants that are similar in their pharmacological effects and chemical structures (16). The term amphetamine-type stimulants also refers to a group of synthetic substances comprising amphetamines-group substances (primarily amphetamine, methamphetamine and methcathinone) and ecstasy-group substances (3,4-methylenedioxymethamphetamine, MDMA and its analogues) (17). It all started in 1887 with the birth of amphetamine. However, amphetamine was only commercialized in 1932 as a nasal decongestant inhaler to treat trivial illness such as rhinitis. Multiple numbers of synthetic routes and the simplicity of production, with Ephedrine easily available as the base to produce amphetamine led to the synthesis of related substances. The more familiar

substances chemically-related to amphetamine include fenetylline, methylphenidate, phenmetrazine and diethylpropion (18). National and international laws and regulations to curb abuse and illicit use of amphetamine in 1960s have led to the production of contraband amphetamine-related drugs with high public health risk and low therapeutic utility, which are designed and taken specifically for their mind- and emotion-altering properties. The most notable illicit amphetamine-related drug is 3,4-methylenedioxy-methamphetamine (MDMA), better known by its street name as 'ecstasy' and considered to be the 'love drug' because it purportedly dispelled feelings of hate or anger and encouraged emotional closeness between users.

Discussions regarding psychostimulants were often filled with confusions regarding terminological ambiguities. Many different terms were used, and this led to the difficulties in differentiating types of amphetamine and methamphetamine. Several reviews and authors did not really differentiate the terms amphetamine and methamphetamine and use them interchangeably (19, 20). Amphetamine-type stimulants were around with different forms and with several names. Powdered methamphetamine of low purity is known as 'speed', 'meth' or 'crank'. 'Pills' can be pharmaceutical grade stimulants or powdered methamphetamine that has been pressed into tablets. Methamphetamine that has been 'washed' in solvent to remove impurities is known as 'crystal' or 'ice' (19). 'Crystal' or 'ice' is a pure form of methamphetamine most likely first produced in eastern Asia in mid-1980s. It was the synthesis of 'ice' that allows the crystallization process into tiny colourless spindle shapes or lumps that resemble small ice crystals, hence the street names. Street names according to types of amphetamine and methamphetamine, and also localities add to the confusion and ambiguities. In Malaysia, crystalline methamphetamine is known as 'crystal', 'syabu' or 'ice' while 'meth' refers to methamphetamine tablets and 'ecstasy' refers to MDMA. In the Philippines, other than being known as 'shabu', crystalline methamphetamine is also known

as ‘bato’, ‘sha’ and ‘siopao’ while MDMA is known as ‘XTC’ and ‘Love drug’. Methamphetamine tablets are known as ‘ya-ba’ and MDMA is known as ‘ya-E’ and ‘ya-Love’ in Thailand (22).

ATS can be consumed by smoking/inhalation, swallowing the pills or through intra-venous injection. Crystal methamphetamine is particularly well-suited to smoking, and this route of administration has been the route of choice in countries where it is commonly used (21, 22). Many users heat the drug in a small, glass pipe and inhale the vapours. It can also be smoked using a ‘bong’ or water pipe. Injecting crystal methamphetamine was reported for the first time in Malaysia in 2009 (23).

Amphetamine and methamphetamine produced mental and physical stimulation. Injection, smoking or vaporization of these substances caused initial rush of euphoria, within a few seconds, that was not seen after administration by other routes. Less intense effect of euphoria took few minutes to develop through nasal inhalation while effects of oral administration may take 20 minutes to take place. Individual who consumed ATS will typically become alert, full of self-confidence, happy and talkative. They appeared full of energy, strong, impulsive and exalted with stamina. Stimulation property from ATS was also utilized for other purposes such as to stop users from being tired and enabling students, for example, to study longer, long-haul drivers to clock in high mileages and sportsmen to train longer and endure high-intensity training. Psychoactive effects of amphetamine could last for up to four hours, while methamphetamine with its stronger CNS stimulant actions, can last for up to 12 hours after administration. Emotional empathy and greater insight with better social closeness and networking are the effects that are craved for by MDMA users. They enjoy the sense of ‘closeness and peacefulness’ that develop after consumption of the substance. Effects of MDMA can last for up to four hours.

2.2 Use and Misuse of Amphetamine-type stimulants

In real fact, the misuse and abuse of ATS are not a new phenomenon (18). Amphetamine, which was first synthesized 100 years ago but was only commercialized in 1932 as a nasal decongestant inhaler, had been abused in World War II by pilots undertaking dangerous war missions due to its mood elevating properties thus making them more confidence and daring during air raids and dog-fights. The lure of slimmer and more curvaceous body shape led to the abuse and illicit use of amphetamine as slimming products and anorectics. In social networks, the use and abuse of ATS are prevalent because it improves social performance in the short-term resulting the user to be more confidence and more open and out-going socially.

The United Nations Office on Drugs and Crime (UNODC) estimates that 30 million people use ATS compared to 15 million who use opiates and 13 million who use cocaine (24). Of this, sixty percent of ATS users (mostly methamphetamine users) live in Asia. However, in 2009, UNODC estimates that, with an annual prevalence in between 0.3% to 1.3%, there will be around 13.7 million to 56.4 million people aged 15-64 globally who had used amphetamine-group substances at least once in the previous year (17). This means that for the past two decades, the use of ATS has grown to be one of the most significant drug problems worldwide and has been superseding the problem of opiates and cocaine. The annual prevalence of use among those aged 15-64 is as follows: Thailand (5.6% in 2001), Australia (4% in 2001), New Zealand (3.4% in 2001), the Philippines (2.8% in 2000), Honduras (2.5% in 1997), the UK (1.6% in 2003), the US (1.4% in 2002), Taiwan (1.2% in 2001), the Czech Republic (1.1% in 2002), South Africa and Germany (0.6% in 2002) and Japan (0.3% in 2001).

While the trends of ATS problems are perceived as increasing or stable by equal member states of UNODC in 2009, the majority of countries in Asia, particularly South and South-East Asia reported perceived increase of ATS use in their countries (17). South-East Asian countries, which are well-known in the past as part of a 'golden triangle' for opium and heroin production and trafficking, are now transforming their roles into becoming a global hub for methamphetamine production and trafficking over the past decade (24-28). The Philippines, Malaysia, China and Myanmar are the East and South-East Asian countries playing a major role in the clandestine manufacturing of ATS, notably methamphetamine (17). Despite being second to Afghanistan in Asian opium production (17), Myanmar is one of the global leading producers of methamphetamine (25). Myanmar produces methamphetamine that is pressed into pills, known as 'ya-ba', meaning 'crazy medicine' in Thai, and the less common variant 'ya-ma', meaning 'horse medicine' (29). These countries and together with Indonesia, are also the hub of MDMA production. Indonesia seized 35 clandestine synthetic drug-manufacturing laboratories in 2009 and these included 25 large-scale and 10 small- scale laboratories (23). Malaysia, which was not known previously to be a major player in manufacturing any kind of illicit drugs, has seen its name becomes significant with methamphetamine production over the last five years (23). In the Philippines, manufacturing of crystalline methamphetamine was first reported in 1996, and in 1997, the first industrial scale clandestine manufacturing facility was reported (17). The repeated raids and seizures by drug enforcement authorities on large-scale covert laboratories in these countries have led to the mushrooming of smaller-scale kitchen-type facilities throughout the country (17, 23). In terms of trafficking, 64% of all ATS seizures worldwide occurred in Asia with a majority of amphetamine seizures happened in Near and Middle East while 95% of Asian methamphetamine seizures happened in East and South-East Asia (17).

Malaysia is not spared in any way in terms of widespread problems of amphetamine-type stimulants. The patterns of drug use in Malaysia remain stable since 2004 with crystalline methamphetamine and methamphetamine pills ranked as the third and fourth most commonly used drugs in Malaysia (23). The number of ATS users had increased from over 8% in 2008 to 18% in 2009 (30). Although traditional illicit drugs such as heroin and cannabis remains the top two most commonly used drugs in Malaysia, the increased number of ATS users corresponded to the decline in the numbers of opiate users in recent years. This could mean a changing trend in the local drug use because drugs such as 'ecstasy', crystalline methamphetamine and ketamine become increasingly popular and affordable, particularly among young drug users (31). Being a developing country and recognized as one of Asian economic powerhouse, Malaysia has an expanding middle-social class with more disposable income leading to the association between use of synthetic drugs, notably stimulants, with modernization and affluent lifestyles. The combination of demands for higher work and social performance and the increasing availability of stimulants in recreational and entertainment settings contribute to escalating use of ATS in developing countries such as Malaysia (32).

The various drug enforcement authorities in Malaysia have been actively conducting raids, seizures and arrests on drug-related offences lately. Drug enforcement operations have led to the increase in crystalline methamphetamine seizures by 70% in 2009, with 1 160 kg seized compared to 679 kg seized in 2008 (32). Nevertheless, seizures of methamphetamine pills and 'ecstasy' dropped nearly 62% and 7% respectively in 2009 compared to the previous year (32). Most of the methamphetamine pills found in Malaysia originated from Myanmar. Some crystalline methamphetamine is trafficked into Malaysia from Myanmar and 'ecstasy' is primarily trafficked from the Netherlands while there are increasing cases of trafficking coming in from Islamic Republic of Iran (32). Nonetheless, the role of local clandestine ATS

laboratories should not be taken lightly. An ATS super-lab was seized in Semenyih, Selangor in 2004 followed by a seizure of an industrial-scale ATS manufacturing plant in Kulim, Kedah in 2006, which was recognized as one of the largest labs in the world (23). Super-lab is an ATS-manufacturing facility that can make 10 or more pounds of ATS per 24-hour using diverted ephedrine and pseudo-ephedrine (19). In Malaysia, the re-tabletting of 'ecstasy' pills originating from Europe has been reported. The pills will be crushed into powder form, mixed with caffeine and other adulterants and then re-pressed for sale at a lower concentration. Re-tabletting and small-scale ATS manufacturing activity were handled by small laboratories called 'box lab' by independent 'cooks' who used cold and influenza medications (19). Crystalline methamphetamine samples analyzed in 2009 showed purities of 75%-80% methamphetamine while each methamphetamine pill has a purity of 25% methamphetamine with an undetermined quantity of caffeine (32). 'Ecstasy' pill has a purity of 20%-40% MDMA plus an unspecified quantity of caffeine (32).

2.3 Drugs and Sex

The words 'sex' and 'drugs' have always been thought to summon some degree of association. Which one comes before the other is a long-debated and inconclusive question. The act of taking drugs is popularly perceived, at least in some social circles, to enhance the act of having sex while at the same time, the act of having sex is often customarily perceived to enhance the effects derived from taking drugs or while intoxicated and under the influence of drugs (33, 34). The use of illicit substances in sexual acts may produce the effects the users seek. However, this belief is just one out of the many explanations that makes up the 'drugs and sex' conundrum because the connections between drugs and sexual function are complex. Factors such as physiological forces, emotional commitment, religious beliefs,

cultural and family values, plus the power of advertisement and information technology have all twist and turn the drugs and sex scenarios (35). Biologically, the use of drugs can influence sexual performance and pleasure by changing the levels of neurotransmitters in the brain (particularly dopamine, serotonin and noradrenaline) that are often associated with pleasure, relaxation, pain relief, mood elevation or increased physical activity; by altering the release of hormones related to sexual arousal; and by altering the blood flow and signal to and from the sexual organs (36).

Colfax et al. (2004) reported that heavy alcohol use and the use of poppers (amyl nitrites), amphetamine or sniffed cocaine in general, as well as specifically just before or during sex, were significantly associated with increased risk of having unprotected anal sex with HIV-positive or unknown-serostatus partner (11). Amyl nitrite was previously seen as a drug associated with gay men and unsafe sex, particularly with "difficulty in controlling sexual behaviour" (37). The key mechanism to this is most likely because being intoxicated "disinhibits' a participant to have sex that includes unprotected sex while also decreasing safer-sex skills (11). This is termed as pharmacological disinhibition. According to Falck and colleagues (1997), both injecting and non-injecting drug users who reported being 'high' when having sex will have more chances to forego the use of condoms (38). The disinhibited behaviours might also work in tandem with clouding of judgment and decreasing pain sensitivity during intercourse leading to unrestrained sexual behaviour where a person is more likely to take sexual risks that he or she would not normally take. Sedgwick (1993) mentioned "epidemic of the will" to describe a situation pointing to the lack of individual control stemming from excessive sex and drug-taking culture (39). This opens-up to higher risk of contracting HIV (40).

The other reason for drugs to be associated with sexual behaviour is due to a phenomenon called synergistic effect. Bull and colleagues (2002) said that the concurrence of

drugs and sex among gay and bisexual intra-venous drug users was due to synergistic effect which results in an increased risk of HIV infection, and for HIV-positive men, an elevated transmission risk (40). This means that sex and drug contribute to each other's effects and consequences on the users. Put in another way, sexual acts increase the effects of drugs use, while the effects of drugs increase the probability, frequency or intensity of sexual acts. Another aspect of this synergistic effect is due to the relationship between drug use and psychological distress. Sexual risk behaviour can be the result of psychological distress (41). Depression and anxiety are the precipitating factors that can lead to the use of drugs to alleviate these negative affects through self-gratifying behaviour such as unprotected sex drug use (42).

Another model connecting sex and drugs is explained by the incorporation of situational and pre-dispositional variables. Situational variables describe the presence and usage of substances and drugs, while pre-dispositional variables describe the role of personality traits and characteristics. It is believed that the interplay between these two types of variables is needed in the sex-drug context. Schafer, Blanchard and Fals-Stewart (1994) reported that personality characteristics which were common to illegal drug use and risky sexual behaviour were those characterized by impulsivity, risk-taking and sensation-seeking characters and the findings of their analysis challenged the pharmacological disinhibition hypothesis as a direct causal mechanism of risky sexual behaviour among drug users (43).

In a recent publication, Calsyn and colleagues (2010) reported that sexual behaviours most common under the influence of drugs or alcohol were more likely to involve anal intercourse, sex with a casual partner and fewer probabilities of using condom (44). The respondents in this study reported increase in sexual desire, delayed orgasm and reduction in sexual disinhibition when being under the influence of the substance and they also claimed about being tempted to use drugs either to enhance their experience, increase the likelihood

that a sexual event would occur and to meet their intimate needs (44). In another publication by Calsyn et al. (2010), they reported that the temptation to use drugs to enhance sexual experience predicted sex under influence (SUI) at 3-month follow-up of the study while half of the participants reported sex under influence (SUI) happened with a casual partner rather than their regular or main sexual partner (45).

2.4 Sex and Methamphetamine

Stimulants are popularly believed to produce aphrodisiac effects and influence sexual experience by increasing sexual excitement (33, 46, 47). More commonly, due to its pharmacological profile, methamphetamine makes an excellent option to facilitate, extend and intensify sexual experiences (48). At lower doses, the effects of amphetamines or methamphetamines have been found to increase libido or modify the process of orgasm, either delaying or contributing to multiple orgasm, or negatively affect the orgasm by causing difficulty and inability to achieve orgasm (49). Cocaine is considered to be the drug of choice for sexual stimulation while 'ecstasy' is considered by many to be a 'love-drug' due to its ability to produce sensual and erotic euphoria. The use of methamphetamine, especially through injection, is most likely to produce heightened sexual response. 27% of the sample in a study by Degenhardt and Topp (2003) said that they usually engaged in sexual activity while using crystal methamphetamine while 22% reported intense sexual arousal related to their use of crystal methamphetamine (2). Substantial amount of the respondents from the same study perceived sexual arousal as a positive effect of the drug (2). There were reports from male methamphetamine injectors that they experienced spontaneous erection upon administration of the drug (50). Frosch and colleagues (1996) stated that methamphetamine users can turn sexually aggressive due to increased sexual desire when intoxicated with the

drug (51). Apart from that, the beliefs and expectations of the effects of the respective drug also contribute in some way or another towards the effects of the drug.

Among heterosexuals, an invitation from a man to a woman for them to go somewhere and share his amphetamine is implicitly considered as an invitation to have sex and could be seen as part of a courting ritual much like an invitation to a dinner or a drink in normal social contexts, although this acts could be perceived by outsiders as trading sex for drugs (46). Rawson et al. (2002) found that both men and women methamphetamine users reported the likeliness to have sex when using methamphetamine with the male methamphetamine users appeared to show high level of sexual thoughts, drive and obsession (52). Brown et al. (2005) did a follow-up study to the one did by Rawson et al. (2002) and found that methamphetamine users were significantly more likely to endorse items related to obsession with sex, a likelihood of having sex while using and expressed concern that sex will be boring without the use of methamphetamine (53). A heterosexual person who uses methamphetamine is associated with risky sexual behaviours, especially unprotected anal sex and sex with new partners (14). Methamphetamine-using heterosexual men reported having more anal intercourse with multiple female sexual partners (54). Even sexual intercourse with regular partners became more frequent (46). Anal sex by heterosexuals who prefer sex while on amphetamine is reported as a factor leading to HIV transmission in this group of people (11). Enhanced libido due to use of methamphetamine is related to increased sexual desire, increased in the sense of sexual pleasure and increased sexual energy while some reported putting their sexual fantasies into practice (46, 55, 56). Cheng and colleagues (2009) reported that the desire to enhance sexual pleasure was a motivation to begin and to continue using methamphetamine among a cohort of HIV-seronegative heterosexual men (57). In addition to this, prior to the changes in sexual behaviours, motivations for methamphetamine use by heterosexual men are to get high, to get more energy and to party (3).

Men who have sex with men (MSM) use methamphetamine to increase libido, improve performance and increase sexual sensation and pleasure leading to its rampant use among the community, especially in the western United States of America (13, 51, 54, 58-60). MSM and MSMW community shares almost the same characteristics regarding sexual behaviour and ATS. The use of amphetamine and methamphetamine will simultaneously increase libido and leads to a situation termed as "crystal dick" among users. Methamphetamine has been described as a drug that creates "instant bottoms" (men willing to engage in multiple episodes of receptive anal sex) in male homosexual or bisexual users (51). Craib et al. (2000) found that young gay men in Vancouver use more psychoactive drugs (including amphetamine and methamphetamine), have more regular and casual sexual partners and more likely to engage in anal intercourse with these partners compared to the same group of cohorts ten years earlier (12). Molitor et al. (1998) reported that 81% of methamphetamine-using gay men were involved in anal-receptive intercourse (54). The MSM and gay practitioners were also reported to engage in unprotective anal sex, and they had sex with someone who had HIV (37). Methamphetamine-using MSM who were HIV-positive were the most common group to engage in intoxicated sex acts and have a greater number of partners who were intra-venous drug users (61). MSM in New York City who defined masculinity in terms of sexual behaviour and perceived more benefits of barebacking (unprotective sexual intercourse) were the more frequent methamphetamine users (58). Ober et al (2009) mentioned that MSM-methamphetamine users were more likely to have 10 or more sexual partners in the previous 12 months (4). In the AIDS Report for the City of Los Angeles in 1997, gay and bisexual men were found to be using methamphetamine to increase sexual stimulation and subsequently led them to change their sexual behaviours to include higher-risk activities, which were not typically engaged if they were not using the drug (62). The same report stated that for the particular community, methamphetamine plays other roles

such as mediating internalized homophobia to allow freedom of sexual expression. It also facilitates immediate, although transitory, access to friendships, to sexual encounters and to increase productivity at the workplace and at home.

As with other drugs such as heroin, chronic and use of high dose of amphetamine and methamphetamine has been implicated with sexual dysfunction such as erectile dysfunction, delayed ejaculation and orgasm (49). Impairment of arousal and low libido can occur due to chronic depletion of dopamine and noradrenaline (63).

2.5 Sex and Heroin

Heroin belongs to the opiate family, together with opium, morphine, methadone and codeine, all of which are derived naturally from poppy plants. These substances are central nervous system depressants that relieve pain and offer sedation to the users. Opiates act on a number of neurotransmitters, including endorphins, which are involved in several functions such as modulating mood and relieving pain. Heroin, in particular, was developed by chemically altering morphine and is faster acting, a more effective analgesics, and more addictive (64). New users of heroin with a small dose of use may enhance desire and sexual performance (15). Heroin users often describe post-heroin administration in sexual terms and often equate the description similarly to the rush of sexual orgasm. Heroin can be a medium to self-medicate those with sexual dysfunction such as pre-mature ejaculation and indirectly promotes longer duration of sexual intercourse due to its ability to delay orgasm plus its relaxing and analgesic properties (65). Longer, chronic and larger dose of heroin use has been found to negatively affect libido, contribute to erectile dysfunction and disturb ejaculation and orgasm (15, 49).

2.6 Sexual Behaviour

Sexual behaviour in the sociological context is actually culturally-determined. A behaviour that is considered strange in one culture might be an acceptable one in another culture. While both the Western and Eastern culture considers homosexuality something to be frowned, other societies not only consider it to be sexually neutral but also accepted and institutionalized it as the proper sexual outlet for adolescent boys (66). Messenger (1971) who interviewed the inhabitants of an Irish village named Inis Beag, located on an island off the coast of Ireland found that tongue kissing, oral-genital contact, pre-marital coitus or extra-marital coitus were things that were unheard of among the population (67). Additionally, the idea of a man putting his mouth on the woman's breast, or a woman stimulating the man's penis with her hand was also considered unusual and intercourse was considered a health risk and was achieved quickly without the removal of underwear (67). In contrast, Marshall (1971) reported that the people on the Polynesian island of Mangaia was exposed to full-scale sexual activity as early as the age of 13 with both the girls and boys having detail anatomical knowledge of penis and vagina (68). Orgasm was considered as the ultimate aim of the intercourse and multiple female orgasms was the aim of the male partner before he reached the climax (68).

The way sexual behaviour is being determined by culture can be explained through the metaphor of sexual scripts (69, 70). This is because sexual behaviour or sexual conduct is a social product with the scripting and formation of this behaviour occurring on three different levels, which are known as 'cultural scenarios', 'interpersonal scripts' and 'intra-psychic scripts'. Cultural scenarios describe the pre-conditions for sex to happen, for example, acceptable partners, acceptable relationship between the involved parties, time and place, order of gestures and words and the appropriate emotions of the involved persons. These scenarios must be translated into personalized interpersonal scripts for use by the

individual actors. Combination of cultural scenarios that have been translated into interpersonal scripts for personal use will allow for internal rehearsal even before any sexual experience takes place, and this package will be translated into the intra-psychic script that will be present in any overt sexual activity. Scripting theory explains that the interpretation of physiological states as sexual is dependent on the social meaning of sex.

Views regarding the acceptability of certain sexual behaviours are also determined by time period. The ancient Greeks did not only tolerate, but actually glorify homosexuality compared to the Greco-Roman civilization that condemned same-sex relationships. Certain churches that have rigid rules on sexual matters have somewhat relaxed their doctrine and stand on sexual morality over the period of time. In the late nineteenth to early twentieth century, a German sexologist named Magnus Hirschfeld argued that homosexuality was a normal form of sexual orientation. At another point of time, Richard von Krafft-Ebing condemned masturbation as a psychologically dangerous practice masturbation altered the development of normal erotic instincts and led to homosexuality, which was a form of psychopathology. Many of the earlier psychiatric works, including Sigmund Freud, considered coitus as the only genuinely healthy, mature and normal sexual outlet and this belief persisted until the early 1970s.

Many cultures, societies and religions still place restrictions on sexual activities that circumvent or replace coitus, or penile-vaginal intercourse, within the context of marriage (71). However, there is little evidence that indicates human beings will confine their sexual gratification only to coitus. The debate on this issue will involve questions about sexual acts either with oneself, or with objects other than human beings. Langstrom and Hanson (2006) have classified sex into impersonal and personal sex (72). According to them, impersonal sex is primarily focused on the sex act, for example, masturbation, pornography use, casual sex,

multiple partners and group sex while personal sex focuses on the person and is considered as intercourse within romantic relationships (72).

Sexual orientations and practices related to each of it also define sexual behaviour. While a majority of us considers ourselves as heterosexuals, there are groups of homosexuals and bisexuals. The sexual acts, practices and beliefs among these groups differ from each other. While monogamy and single partner is considered a norm among heterosexuals, sexual liberation and multiple partnering characterizes the gay community.

Childhood sexual and physical abuse is widely known to have multiple repercussions in later life of the affected individual. Many social and psychological sequelae have been reported in person who had been sexually or physically abused as a child. A study among MSM found that subjects with childhood history of sexual abuse reported higher rates of HIV sexual risk behaviour (73). Sexual abuse in childhood may also be a specific risk factor for sexual addictions such as paedophilia (74) as well as substance addiction such as opiate (75).

2.7 Background of study locations

Malaysia is located in the South East Asian region. It achieved independence from the British as it last colonial power in 1957 when it was known as Malaya, which consisted only the Malay Peninsula. However, Malaysia came into the picture in 1963 with the inclusion of Sabah, Sarawak, Brunei and Singapore but the latter two withdrew to become independent countries several years after that. Presently, Malaysia is divided into two parts by the South China Sea- East and West Malaysia. Sabah, Kelantan and Federal Territory of Kuala Lumpur are three out of fourteen states that make-up Malaysia.

Sabah is located at the northern part of the island of Borneo, and is one of the two states that make-up East Malaysia. Within an area covering 73 200 kilometre^2, it is the second largest state in Malaysia. It has a long massive coastline of 1 600 kilometres washed by the South China Sea in the west, the Sulu Sea in the northeast and the Celeb Sea in the east. The total area of Sabah territorial water is 55 828 kilometre^2. Due to its location, Sabah shares its international boundaries with countries like the Philippines and Indonesia. There are 23 districts in Sabah but most of the populations are concentrated in five districts such as Kota Kinabalu, Tawau, Sandakan, Lahat Datu and Sempoerna in which the major towns are located.

Kota Kinabalu is the major city in Sabah and being the capital of the state, plays the role for both the administrative and financial centre for the state. It is located on the northwest coast of Borneo facing the South China Sea with an area of 351 km^2. Kota Kinabalu proper has a population of 462 963 with a density of 1 319 per km^2, while the larger urban area has an estimated population of 900 000 (76). It is the largest urban centre in Sabah.

Kelantan is a state located at the north-east of Peninsular Malaysia. It is bordered by Narathiwat Province of Thailand to the north, and its other borders are with other Malaysian states surrounding it. The land area of Kelantan is only separated from Thailand by a medium – size river called Sg. Golok which is infamous for stories and reports about smuggling, either goods smuggling or human trafficking. The small separation of the border between this two countries provides opportunities for people to travel to-and-from each country regularly, either legal or illegally. It covers the land area of 14 992 kilometer^2 and consisted of 12 territories *(jajahan).* Kelantan has a chiefly agrarian economy dominated by rice, rubber and tobacco plantations. Fishing is also a main source of economy due to its 96 km long coastline.

Kota Bharu is the state capital of Kelantan and itself one of a territory in Kelantan. It has an estimated population of 610 000 in 2010 making it the largest and most populated city in the east coast of Peninsular Malaysia. The city population has an overwhelming Malay population because Kelantan itself is a Malay-populated state. Other than that, the Chinese also makes-up the population of Kota Bharu. Kota Bharu is the administrative, financial and business centre for Kelantan.

Kuala Lumpur is defined within the Federal Territory of Kuala Lumpur. It is one of the Federal Territories of Malaysia. It is an enclave within the state of Selangor and is located on the central west coast of Peninsular Malaysia. It is the capital city of Malaysia and the second largest Malaysian city by population. The city proper has an area of 243 km^2 with a population of 1.67 million in 2010 (76). It the most populated state in Malaysia with 6 891 persons per square kilometre with 100% urbanisation level (76). Kuala Lumpur and its surrounding areas, better known as Klang Valley, is the most industrialized and economically, the fastest-growing region in Malaysia. It was once the executive and judicial centre for the government, as well as a business centre before the relocation of the two branches of the government to Putrajaya. However, the relocation process did not put a dim on Kuala Lumpur as it continues and strives to be Malaysia's major metropolitan city. Its population consists of mixes between the country's three major ethnic groups; Malays, Chinese and Indians, as well as Eurasians and indigenous people of Sabah and Sarawak. There is also growing population of expatriates and foreign workers.

CHAPTER 3

RATIONALE AND OBJECTIVES

3.1 Rational of Study

In general, Malaysia is a conservative society where sensitive and private topics such as sex and drugs are seldom being discussed or admitted. This has limited the amount of resources regarding these topics. Therefore, this study is very important to provide information on the sexual behaviour together with two of the most commonly used drugs in the country. The study will determine the pattern and trend of sexual behaviour among methamphetamine and heroin users. Through this study, a baseline data and a clearer representation of the sex and drugs scene in Malaysia can be made known. The data and knowledge obtained from this study could be used for future preventive methods and treatment modalities especially in areas of addictions and sexually-transmitted diseases. The knowledge from this study could also be applied to improve the current drug treatment and rehabilitation programme by providing information on which topics to be emphasized in the programme.

3.2 Study Question

What is the pattern of sexual behaviour among methamphetamine and heroin users?

3.3 General objective

To study the sexual behaviour among methamphetamine and heroin users and their socio-demographic characteristics

3.4 Specific Objective

1. To determine the pattern of methamphetamine and heroin use among those attending drug rehabilitation programme in Kota Kinabalu, Kota Bharu and Kuala Lumpur

2. To describe the pattern and characteristics of sexual behaviour among these subjects that includes influence of methamphetamine and heroin on:

I - Sexual thoughts, feelings and acts

II - Sexual desire

III – Sexual performance

IV- Sexual enjoyment

V – Sexual pre-occupation

VI – Risky behaviours

3. To describe the entanglement and mixture between drugs and sex, and also the motives and perception of drug use.

4. To determine the demographic characteristics of methamphetamine and heroin users

CHAPTER FOUR

MATERIALS AND METHODS

4.1 Study Setting

This study was carried out among the attendees of the drug rehabilitation programme run by Agensi Anti Dadah Kebangsaan (AADK) (Malaysian National Anti Drug Agency) in Kota Kinabalu, Sabah and Kota Bharu, Kelantan and Universiti Malaya Centre of Addiction Sciences (UMCAS), Kuala Lumpur. The selection of study location was made after consultation with AADK (77).

The cities included in this study are all the state capital of Malaysia while Kuala Lumpur is itself the capital for Malaysia. Kota Kinabalu, Kota Bharu and Kuala Lumpur are densely populated areas due to their role as administrative and business centres for their respective state. These cities are the major city in their respective regions; Kota Kinabalu is the largest Malaysian city in Borneo, Kota Bharu is the largest city in the east coast of Peninsular Malaysia while Kuala Lumpur is the hub of activity in the central area of the west coast of Peninsular Malaysia.

The Malaysian National Anti Drug Agency (AADK) runs the drug rehabilitation programme in all these cities. In Sabah, AADK has five main offices, including the state office. The other four offices are located in the district of Kota Kinabalu, Sandakan, Tawau and Federal Territory of Labuan. The drug rehabilitation programme is run at the district offices and also from several smaller offices called community centres located in smaller townships. In the state of Kelantan, AADK runs its drug rehabilitation programme from 10 district offices. The Kota Bharu office is located in Pengkalan Chepa, an area just outside the town of Kota Bharu.

AADK runs drug rehabilitation programmes for those that were put under court order after being found guilty of drug use. These offenders were found guilty of using illicit drugs by the court and AADK is empowered to enforce and implement necessary authority on them under the Dangerous Drugs Act (1952) and Drug Dependents Act (Treatment and Rehabilitation) 1983 (6). In some instances, AADK also enforces and implements the power accorded to them under Dangerous Drugs Act (Special Preventive Measures) 1985 and Dangerous Drugs Act (Forfeiture of Property) 1988 on persons suspected to be involved in drug trafficking and to forfeit the proceeds of drug trafficking, respectively (6, 78). Those attending the rehabilitation programmes at AADK district offices were those involved in the community treatment and rehabilitation programme, also known as surveillance cases *(Orang Kena Pengawasan- OKP)* (6). These were persons ordered for treatment and rehabilitation in the community under Section 6(1)a and 6(1)b, 8(3)a and 8(3)b Drug Dependents Act (Treatment and Rehabilitation) 1983 and cases under Dangerous Drugs Act 1952. The rehabilitation programme in the community or known as aftercare programme is an important programme because until December 2009, there were 35 881 persons under surveillance in the community (6) and until July 2011, there were 55 966 community surveillance cases (79). Supervisions of these cases were done by the district AADK officers and also police officers in the area, and those involved must follow the rehabilitation programme which was determined under Director General's Permanent Order Chapter C: Rehabilitation in the community. The person under community surveillance needs to report him or herself according to the stipulated schedule, most commonly once every month at the specified AADK office and nearby police station. The person also must attend the rehabilitation programmes that are held by the agency.

The Malaysian National Anti Drug Agency implements rehabilitation programme based on the Matrix Model of outpatient treatment that was developed in 1980s in response to

an overwhelming demand towards stimulant abuse treatment services (80). The model was aimed to create an outpatient programme that is responsive to the needs of stimulant-abusing clients. In Malaysia, the Matrix Model was adapted from the Matrix FAST Model that is used in Thailand because Malaysia and Thailand are facing almost the same problem with ATS drugs (81).

Kota Kinabalu and Kota Bharu were selected to be the centre for data collection, especially for methamphetamine problems because these two districts have the highest number of ATS abusing clients and have the highest number of clients being under community surveillance (81). From October to December 2011, AADK Kota Kinabalu has 195 cases under community surveillance while AADK Kota Bharu has a whopping 948 community surveillance case.

Universiti Malaya Centre of Addiction Sciences (UMCAS) is a centre for research under the Health and Translational Cluster (HTC) of Universiti Malaya. It is a centre that integrates clinicians of various disciplines like medicine, dentistry and psychology who collaborate with other disciplines and outside agencies such as the National Anti Drug Agency itself. It is currently active in researches in different fields of addiction, including amphetamine-type stimulant (ATS) and opiates. UMCAS currently runs methadone maintenance therapy programme with collaborations with Ministry of Health, Malaysia. It has its own methadone research centre (which double up as a methadone clinic) and also a methadone clinic at a nearby mosque called Spiritual Enhancement Drug Addiction Rehabilitation (SEDAR). From October to December 2011, there are 115 opiate users under the UMCAS methadone programme. These clients will attend the clinic at least once every week for consultation with the clinicians and also attend counselling and individual or group therapy sessions.

4.2 Study Design

This is a cross-sectional study involving subjects under community surveillance programme because of drug-related offences at AADK Kota Kinabalu and Kota Bharu and subjects attending methadone maintenance therapy programme at UMCAS clinic, Kuala Lumpur. Convenience sampling was used in this study whereby every subject that reported to the centres was approached and invited to participate in the study. The study was conducted using a self-rated questionnaire followed by face-to-face interview. All subjects were assured regarding the confidentiality of the responses and ensured that their responses will not affect either the on-going surveillance process or the treatment and rehabilitation programmes.

4.3 Study and Data Collection Period

The study was conducted from October to December 2011 for a period of 3 months. The author made minimum of 2 trips to each of the centre for data collection. Each stay for data collection was around 3 to 5 days.

4.4 Study Population

The samples were all the drug users under the community surveillance programme of AADK Kota Kinabalu and Kota Bharu attending rehabilitation programmes or scheduled reporting plus opiate users attending the methadone clinic of UMCAS, Kuala Lumpur. As mentioned above, throughout the study and data collection period from October 2011 until December 2011, AADK Kota Kinabalu has 195 community surveillance cases while AADK Kota Bharu has an enormous number of 948 similar cases. UMCAS, Kuala Lumpur has about 115 opiate users attending the methadone clinic for that duration of time.

4.5 Inclusion Criteria:

I. All non-institutionalized persons who attend/report to AADK community surveillance programme at AADK Kota Kinabalu and AADK Kota Bharu plus clients of methadone clinic UMCAS, Kuala Lumpur (out-patient basis).

II. Has documented evidence of using either methamphetamine or opiate through positive urine for drugs test or through self report. The drug should be used for at least six months prior to enrolment into the programme.

III. Methamphetamine or opiate was used as the primary drug of abuse

IV. Not currently intoxicated or in withdrawal state at the time of interview.

V. Being sexually active. This is determined prior to recruitment by asking possible subjects about their level of interest in sex that includes either presence or involvement in sexual thoughts, feelings, acts or sexual interest and desire. The rationale of this criterion is that only subjects that still consider sex as an important part in their life are included in the study.

VI. Able to understand, communicate, read and write either in Malay or English

VII. Subjects who understand and consented to the study protocol

4.6 Exclusion Criteria:

I. Female

II. Subjects who were psychotic or receiving psychiatric treatment

III. Those refused to participate

4.7 Data Collection

This study was started with the validation of the Substance Abuse and Sexual Behaviour Survey as the main questionnaire to be used in this study.

4.7.1 Questionnaire

A mix of semi-structured interview and self-rated questionnaire was used in this study. The components of the questionnaire are:

Part A: Socio-demographic data

Part B: MINI International Neuropsychiatric Interview (MINI) questionnaire – Non-alcohol Psychoactive Substance Use Disorders (Section K)

Part C: Substance Use and Sexual Behaviour Survey (SUSBS)

Part A was designed to obtain socio-demographic characteristics and contained 10 questions that were asked by the interviewer. Part B is about assessing the characteristic of use for both the ATS and opiate. Questionnaire in Part C dealt with sexual behaviour questions that will be answered by the subjects. The English version of SUSBS was translated and validated into Malay for the use in this study.

4.7.2 Steps of Data Collection

Permission to carry out the survey was obtained prior to the survey date from the following authorities:

I. Medical Research Ethics Committee, Faculty of Medicine, Universiti Malaya, Kuala Lumpur

II. Director General, Agensi Anti Dadah Kebangsaan (AADK)

III. Director of Agensi Anti Dadah Kebangsaan Sabah and Kelantan office

IV. Director of Agensi Anti Dadah Kebangsaan Kota Kinabalu and Kota Bharu office

All subjects attending AADK offices and UMCAS clinic for scheduled reporting, treatment and rehabilitation programme were approached to be included in this study. The subjects were initially briefed about the study and subsequently given the Patient Information Sheet to make them better understand the study, its objectives and study protocol. Eligible subjects who met the inclusion and exclusion criteria and verbally consented were then given a consent form to be filled-up and afterwards were interviewed by the author. The interview was conducted in privacy and started with Part A and B of the questionnaire. Participants will finish of the process by answering the self-rated Part C (Substance Use and Sexual Behaviour Survey) in privacy. Confidentiality was guaranteed, and participants were assured that none of the information given will be known to their supervising AADK officer or UMCAS clinician or included into their personal file. Participants were furthermore assured that co-operation in this study will not affect their treatment and rehabilitation programme. Those refused to participate was also assured that their non-participation will have no bearing on their treatment and rehabilitation and did not have any legal bearing. The author who is a

clinician will help to facilitate referral to the nearest psychiatric services for subjects who were suspected of having psychiatric illness or have discontinued their psychiatric follow-up.

Participants were interviewed one-by-one by the interviewer in a private area without the presence of any AADK officer or UMCAS staff. Participants also answered the self-rated questionnaire in a private space. At the end of the data collection process, the participants were shown that all the questionnaires were placed and sealed in a separate envelope to guarantee confidentiality.

4.8 Sample size

The sample size was calculated by using the formula:

$$N = \frac{Z^2P(1-P)}{d^2}$$

There is no prevalence study on sexual behaviour among methamphetamine or related psychoactive substances and opiate users in Malaysia. Most of the overseas study only looked at risky sexual behaviour among methamphetamine/amphetamine or opiate users. The prevalence of risky sexual behaviours among methamphetamine users from studies in Western countries ranged from 5% to 15%. For this study, the sample size was based on the prevalence of 10%. The level of confidence was set at 95%, Z value at 1.96 and d was set at 5%. The sample size was:

$$N = \frac{1.96^2(0.1)(0.9)}{0.0025} = 138$$

At the time of data collection between October to December 2011, AADK Kota Kinabalu has 195 community surveillance cases while AADK Kota Bharu has 948 cases. UMCAS, Kuala Lumpur has about 115 opiate users attending the methadone clinic for that duration of time. This resulted in the total of 1 258 cases for the three centres. Although the sample size of 138 was just 10% of the total population for the three centres, it was considered adequate given the limited time and fund for data collection process in this study. The difficulty included transportation problems and work commitments that hindered the author from making more frequent trips and longer stays during data collection at these centres. The author was unable to access the formal list of clients under the care of AADK and UMCAS due to legal and administrative issues.

4.9 Instruments

4.9.1 Social Demographic and Clinical Data

A set of questionnaire was devised to collect socio-demographic data of the participants. The first component of the socio-demographic questionnaire consisted of questions to gather social and demographic information such as age, gender, ethnicity, marital status, living arrangement, education level and total years of education, employment status, type of employment and estimated monthly income. The second component was regarding the clinical information on substance use such as type of primary drug of abuse, years of drug use, number of days in a week for drug use, average estimated financial cost for drug use and also questions regarding sexual behaviour and practices. This second component will be answered by the participants through self-reporting because some of the questions regarding sexual behaviour can be sensitive and provocative.

4.9.2 MINI-INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW

The Mini-International Neuropsychiatric Interview (MINI) is a short structured diagnostic interview, developed jointly by psychiatrists and clinicians in the United States and Europe, for DSM-IV and ICD-10 psychiatric disorders. It was designed to meet the need of a short but accurate structured psychiatric interview. It can be administered within 15 minutes and was designed to meet the need for a short but accurate structured psychiatric interview for multi centre clinical trials and epidemiological studies and as a first step in outcome tracking in non-research clinical settings.

The MINI consists of standardized, structured, closed-ended questions throughout its diagnostic procedure. The MINI has demonstrated adequate reliability and validity. Research has shown that the MINI can be used successfully as a gold standard of psychiatric diagnosis in multi-centre clinical trials and epidemiological studies.

Only the Section K of the MINI was used in this study. Section K is to diagnose 'Non-alcohol Psychoactive Substance Use Disorders' and three questions: K1, K2 and K3 was used to assess dependence and abuse of the drugs among the participants. Sexual behaviour was not assessed using MINI because there is no section in either DSM-IV or ICD-10 that focuses primarily on hypersexuality such as heightened sexual desire and performance.

4.9.3 Substance Abuse and Sexual Behaviour Survey (SUSBS).

Substance Use and Sexual Behaviour Survey (SUSBS) is a 25-question self-report questionnaire first used by Rawson et al. (2002) in a study to assess the role of drug type and gender on sexual effects (52). The total questions to be answered are 46, but the first 21

questions are about basic socio-demographic data and clinical data regarding drug use and sexual practices. Although most substance users are poly-drug users, the 25 questions seek to answer questions regarding sexual thoughts, feelings and behaviours that the participants re-collected from the last time they were under the influence of the single primary, and the most used psychoactive agent associated with the reason to be involved in the current drug treatment and rehabilitation programme:- ATS and opiate. The instrument is an outgrowth of an intake questionnaire developed by Arnold Washton (1989) for cocaine-dependent out-patients (47). Questionnaire items were selected by its author based on their clinical relevance and face validity. The psychometric properties of the questionnaire have never been formally established. Its briefer version of the questionnaire was used earlier in a survey of cocaine-dependent out-patients and it was found that 60% of patients reported a significant association between cocaine use and sex (47). It was later expanded and modified into its current form to include sexual behaviours related to other types of drugs. The same 25 questions were later used in a follow-up study by Brown and colleagues (53). Items from the same questionnaire were also incorporated into interview questions in a study regarding social context and perceived effects of drugs on sexual behaviour among individuals who use both heroin and cocaine (82). There is an 11-item subset of questions that represent the domains of sexual drive, performance, pleasure, obsession, risk-taking, entanglement with drug use and treatment for sexual behaviours related to drug use. There are also 10 items assessing the domains of sexual fantasies, sexual orientation, depression and guilt. These 10 items pertain primarily to the negative associations with the substance of use.

The original questionnaire was later translated and validated in the Malay version and used in this study after receiving permission from the author of the original questionnaire. To the author's knowledge, no such validated instrument assessing substance use and sexual behaviour exists to date.

4.9.3.1 Validation of Substance Use and Sexual Behaviour Survey – Malay Version (SUSBS-MV)

Stage 1

The English version of Substance Use and Sexual Behaviour Survey (SUSBS) is translated to Malay by two authors who are bilingual (Malay and English). Later, two other authors who are also bilingual, back-translate it into English. A harmonized version of the survey is produced after any differences were discussed and corrected if needed.

Stage 2

The translated version is put through a pilot test patients attending addiction clinic. Items in the translated version are revised and modified. The finalized version is further reviewed by two other authors to ensure satisfactory face, semantic, criterion and conceptual similarities.

Stage 3

This is the validation stage. A group totalling 130 heroin users in the methadone maintenance therapy from Universiti Malaya Medical Centre is approached for validation stage. They are given the following questionnaires:

1. The English version of Substance Use and Sexual Behaviour Survey (SUSBS)
2. The Malay version of Substance Use and Sexual Behaviour Survey (SUSBS-MV)
3. University of California, San Diego FASTLANE sexual risk reduction intervention programme questionnaire. The selected questions were those which covered topic of 'Sexual Behaviour When High on Meth' (questions 230-264).

2 weeks later, they are again required to complete the Malay version of Substance Abuse and Sexual Behaviour (SUSBS-MV).

4.9.4 Statistical Analysis

The data were coded accordingly and keyed into the Statistical Package for Social Sciences (SPSS) version 15. The socio-demographic and clinical data was analyzed using descriptive statistics. The participants' answers for the 25 questions regarding sexual behaviours were re-coded into "Yes" and "No". The relationships of the 25 questions with the primary drug of use were first analyzed using Chi-square test. Later, a univariate analysis using Chi-square was done to produce the crude odds ratio (OR) for each of the questions. The data was then adjusted for age, marital status, highest education level and ethnicity. Following that, a multivariate analysis using logistic regression was applied to produce adjusted odds ratio. The score of the questionnaire was shown by the difference of means using Mann-Whittney test. The level of statistical significant was set at 0.05. As a sub-analysis, questions 31, 32, 33 and 34 of SUSBS questionnaire, which are designed by the original author to evaluate risky sexual behaviours were then computed together to produce the odds ratio for risky sexual behaviour. Normality test was applied to assess for the distribution of subjects according to their age and also the score of the questionnaire.

4.9.5 Ethical Consideration

This study was approved by the Medical Research Ethics Committee (MREC) of Universiti Malaya. Approval was also given by Agensi Anti Dadah Kebangsaan on the behalf of their Director General. The AADK State Director of Sabah and Kelantan and also AADK District Director of Kota Kinabalu and Kota Bharu also approved the study. Written informed consent was obtained from all the participants.

CHAPTER FIVE

RESULTS

This was a cross-sectional study of sexual behaviour among methamphetamine and heroin users in Kota Kinabalu, Kota Bharu and Kuala Lumpur over a period of three months from October to December 2011. During this study period, a total of 241 subjects were approached to participate in this study. Out of this, only 227 were included into the study proper by virtue of fulfilling the inclusion and exclusion criteria and by answering all the questions in the 25-question self-rated questionnaire. 14 subjects were excluded based on not meeting the inclusion and exclusion criteria, incomplete response of the self-rated questionnaire and refusal to participate. This gave the response rate of 94.2%.

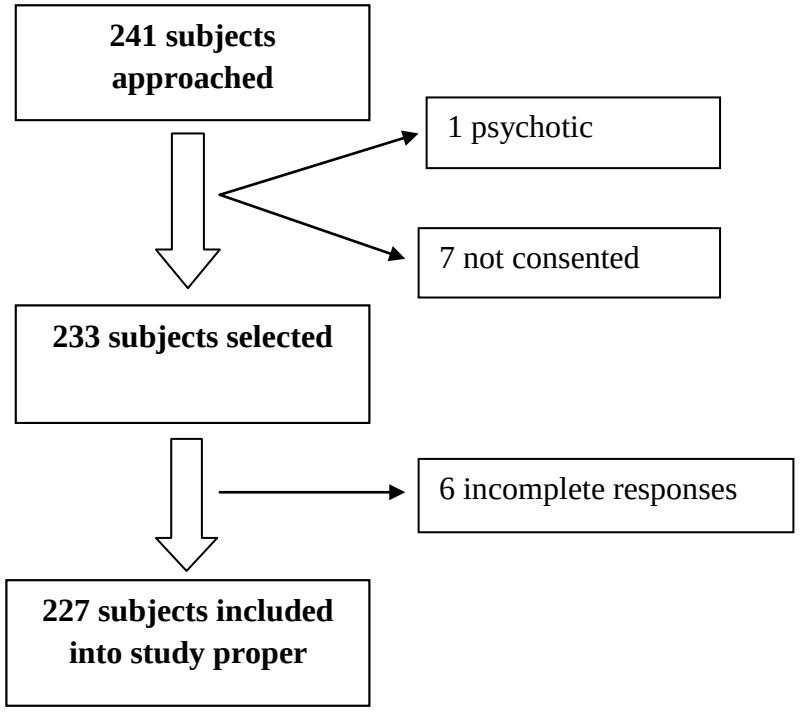

Figure 5.1: Recruitment of study subjects

Kuala Lumpur has the highest number of participants of 103 (45.4%), followed by Kota Kinabalu 78 (34.4%) and Kota Bharu 46 (20.3%). All the participants from Kuala Lumpur (103; 45.4%) used opiate (heroin) as the primary drug of abuse while all participants from Kota Kinabalu (78; 34.4%) used crystal methamphetamine (‘syabu’) and so did all the participants from Kota Bharu (46; 20.3%). In general, for both methamphetamine and opiate, majority 165 (72.7%) was dependent on the illicit substance.

5.1.1. Socio-Demographic characteristics of participants

Table 5.1 showed the distribution of all the participants by their socio-demographic characteristics. In general, for the total of 227 participants, the mean age for the sample was 33.12 years with a standard deviation of ±8.98 years, and the age range was within 19-56 years. All participants included were males. The participants were categorized based on their ethnicity due to the ethnic diversities of the study location. The participants were mostly represented by the Malays (153; 67.4%) followed by the natives of the island of Borneo (51; 22.4%). Majority (173; 76.2%) of the participants have full-time employments. Most of the participants (60.8%) were working as labourers or in the services' field doing manual jobs such as drivers, security guards, waiters or construction workers. 88.1% of them earned up to RM 1500 per month. More than half (123; 54.2%) were single and 120 (52.9%) of the participants still lives with their parents or siblings. More than half (120; 52.9%) of the participants had completed higher secondary school meaning that they had at least attended Form 5. However, the mean year of education was only 10.46 years with standard deviation of 2.32 years.

Table 5.1: Socio-demographic characteristics of all participants

Independent Variables	Frequency	Percentage (%)	Mean ± s.d.
Age (years)	227	100	33.12 ± 8.98
Age Group (years)			
11 – 20	12	5.3	
21 – 30	91	40.1	
31 – 40	78	34.4	
41 – 50	31	13.7	
51 - 60	15	6.6	
Ethnicity			
Malay	158	69.6	
Chinese	10	4.4	
Indian	2	0.9	
Kadazan-Dusun	26	11.5	
Bajau	16	7.0	
Others	15	6.6	
Marital Status			
Single	123	54.2	
Married	83	36.6	
Divorced/Separated	18	7.9	
Widowed	3	1.3	
Living Arrangement			
Alone	22	9.7	
With partner/spouse	78	26.9	
With biological family	120	52.9	
With friends	7	13.2	
Highest Education			
Primary school	16	0.7	
Lower secondary	61	26.9	
Higher secondary	120	52.9	
College/University	30	13.2	
Total years of education	227	100	10.46 ± 2.38
Employment Status			
Unemployed	36	15.9	
Employed part-time	18	7.9	
Employed full-time	173	76.2	
Type of employment			
Labour/Manual	44	19.4	
Services	94	41.4	
Own employment	8	3.5	
Business	21	9.3	
Semi-skilled	21	9.3	
Skilled	2	0.9	
Level of income			
RM 0 – RM 500	46	20.3	
RM 501 – RM 1000	73	32.2	
RM 1001 – RM 1500	82	36.1	
RM 1501 – RM 2000	8	3.5	
RM 2001 – RM 2500	13	5.7	
> RM 2501	5	2.2	

Figure 5.2 showed that according to age, the participants were not normally distributed (Kilgomorov-Smirnov test = 0.000). The participants were positively skewed.

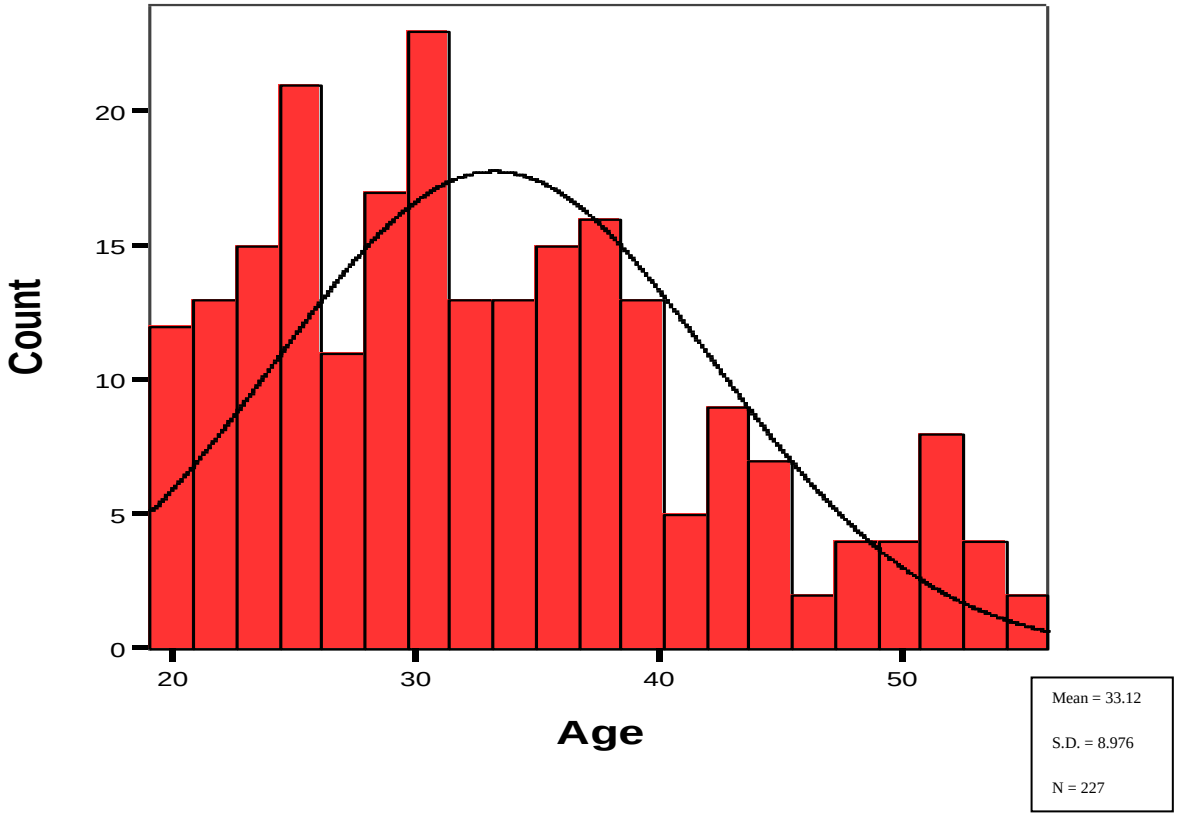

Figure 5.2: Distribution of participants by age

Table 5.2 showed the socio-demographic information for the methamphetamine and heroin users as separate groups. It appeared that methamphetamine was used by those in younger age groups compared to those using heroin and there was a statistically significant difference of mean age between the two groups. More than half of methamphetamine subjects were concentrated in the 21 to 30 years old group (68; 54.8%) while a bulk of heroin subjects were spread between the ages of 31 to 60 years old group. Malays were the largest users of both methamphetamine and heroin. Almost none of the natives of Sabah was using heroin. The natives of Sabah such as Kadazan-Dusun, Bajau, Suluk, Lundayeh and Iban were mostly methamphetamine users. Majority of methamphetamine (71; 57.3%) and heroin (52; 50.5%) subjects were single. Both of these groups have relatively similar mean years of education and most subjects reached upper secondary level. Three-quarter of methamphetamine and heroin subjects have full-time job suggesting a fair level of psycho-social functioning in the community. Many of the subjects were doing labour/manual works and service-related jobs.

Table 5.2: Socio-demographic characteristics for methamphetamine and heroin group

Independent variables	**n (%)**		**p-value**
	Methamphetamine	**Heroin**	
Age (years) mean ± s.d.	29.01 ± 7.19	38.08 ± 8.42	$p < 0.05$
Age group			
11 – 20	12 (9.7)	-	
21 – 30	68 (54.8)	23 (22.3)	
31 – 40	31 (25.0)	47 (45.6)	$p < 0.05$
41 – 50	13 (10.5)	18 (17.5)	
51 – 60	-	15 (14.6)	
Ethnicity			
Malay	60 (44.4)	98 (95.1)	
Chinese	8 (6.5)	2 (1.9)	
Indian	0 (0)	2 (1.9)	$p < 0.05$
Kadazan-Dusun	26 (21.0)	1 (1.0)	
Bajau	16 (12.9)	-	
Others	14 (6.2)	-	
Marital status			
Single	71 (57.3)	52 (50.5)	
Married	40 (32.3)	43 (41.7)	$p > 0.05$
Separated/divorced	13 (10.5)	5 (4.9)	
Widowed	0 (0)	3 (2.9)	
Living arrangement			
Alone	10 (8.1)	12 (11.7)	
With partner/spouse	39 (31.5)	39 (37.9)	$p > 0.05$
With friends	4 (3.2)	3 (2.9)	
With own family	71 (57.3)	49 (47.6)	
Total years of education	10.32 ± 2.42	10.62 ± 2.34	$p > 0.05$
Education level			
Primary	12 (9.7)	4 (3.9)	
Lower secondary	32 (25.8)	29 (28.2)	$p > 0.05$
Higher secondary	64 (51.6)	56 (54.4)	
College/University	16 (12.9)	14 (13.6)	
Employment			
Full time	92 (74.2)	81 (78.6)	
Part time	10 (8.1)	8 (7.8)	$p > 0.05$
Unemployed	22 (17.7)	14 (13.6)	
Type of employment			
None	23 (18.5)	14 (13.6)	
Labour/manual	27 (21.8)	17 (16.5)	
Semi-skilled	13 (10.5)	8 (7.8)	
Skilled	2 (1.6)	- (-)	$p < 0.05$
Business	12 (9.7)	9 (8.7)	
Own employment	2 (1.6)	6 (5.8)	
Services	45 (36.3)	49 (47.6)	
Level of monthly income			
RM 0 – RM 500	27 (21.8)	19 (18.4)	
RM 501 – RM 1000	50 (40.3)	23 (22.3)	
RM 1001 – RM 1500	37 (29.8)	45 (43.7)	$p < 0.05$
RM 1501 – RM 2000	3 (2.4)	5 (4.9)	
RM 2001 – RM 2500	7 (5.6)	6 (5.8)	
> RM 2501	-	5 (4.9)	

5.1.2. Clinical Data for Drug Use

There were 124 (54.6%) methamphetamine subjects compared to 103 (45.4%) heroin subjects. For the total of 227 methamphetamine and heroin users who participated in this study, the mean years of drug use was 8.2 ± 7.7 years. The participants used either drug about 4 days in a week (mean 4.3 ± 3.3 days). On the days that they used the drug, the participants spent around RM70 (mean RM72.71 ± RM 66.48) with the lowest being RM 2 and the highest being RM 500. In overall, both methamphetamine and heroin subjects preferred smoking (202; 89%) as the most common method of drug administration followed by injection (26; 11.5%).

The duration of drug use for methamphetamine was 3.84 ± 3.71 years while for heroin it was 13.41 ± 8.15 years. Methamphetamine subjects used the drug for about 2.75 ± 2.15 days per week while heroin subjects used the drug almost every day with a mean of 6.34 ± 3.41 days per week. Methamphetamine subjects spent higher in terms of money for around RM 73.99 ± RM 82.55 on the day that the drug was used compared to heroin subjects who spent slightly lesser at RM 71.17 ± RM39.66.

Table 5.3 showed drug-using behaviour among methamphetamine and heroin subjects. The preferred method of drug use for both methamphetamine and heroin was smoking/chasing. There were more heroin subjects (24; 21.8%) that used injection as a method of drug administration. Methamphetamine was commonly used for social reason (74; 59.7%) and work (29; 23.4%) while usual motives of heroin use were due to own curiosity (52; 50.5%) and social reason (46; 44.7%). Methamphetamine was usually used with alcohol while heroin was commonly used together with amphetamine-type stimulants and cannabis. Other substance that was co-morbidly used was inhalant (glue) sniffing.

Table 5.3: Drug-using behaviour for methamphetamine and heroin subjects

	Methamphetamine n (%)	**Heroin n (%)**
Methods of administration		
Swallowing/Oral	6 (4.7)	0 (0)
Inhalation/Nose	3 (2.4)	0 (0)
Smoking/Chasing	116 (91.3)	86 (78.2)
Injection	2 (1.6)	24 (21.8)
Motives of use		
Own curiosity	10 (8.1)	52 (50.5)
Social	74 (59.7)	46 (44.7)
Work	29 (23.4)	1 (1.0)
Psychological distress	11 (8.9)	4 (3.9)
Co-morbid drugs		
Alcohol	64 (51.6)	15 (14.6)
ATS	-	28 (27.2)
Cocaine	1 (0.8)	8 (7.8)
Cannabis	19 (15.3)	23 (22.3)
Opiate	8 (6.5)	0 (0)
Others	4 (3.2)	0 (0)

5.1.3. Sexual Behaviour

The descriptive data for sexual behaviour is shown in Table 5.4. Majority (218; 96%) of the participants were heterosexuals followed by bisexuals (3; 1.3%) and homosexuals (3; 1.3%). The participants have the mean of 1.7 ± 3 sexual partners in the last 6 months.

Table 5.4: Sexual behaviour data among all participants

Independent variables	**Frequency**	**Percentage (%)**
Sexual Orientation		
Heterosexual	218	96
Homosexual	3	1.3
Bisexual	6	2.6
Frequency of being involved in high risk sexual behaviour		
Always	18	7.9
Sometimes	86	37.9
Never	123	54.2
HIV status		
Positive	2	0.9
Negative	185	81.5
Don't know	40	17.6
Childhood sexual abuse		
Yes	8	3.5
No	219	96.5
History of being raped or sexually molested		
Yes	7	3.1
No	220	96.9
Having problems with sexual addiction before drug addiction		
Yes	21	9.3
No	206	90.7
Sexual addiction is a bigger problem than drug addiction		
Yes	11	4.8
No	216	95.2
Prior involvement in drug rehabilitation programme		
Yes	92	40.5
No	135	59.5
Previous sexual addiction treatment		
Yes	1	0.4
No	226	99.6
Previous treatment for trauma		
Yes	0	0
No	227	100

Table 5.5 shows the descriptive data regarding sexual behaviour for respective groups based on methamphetamine and heroin users. Both the methamphetamine and heroin subjects were mostly represented by heterosexuals. Participants who used methamphetamine has more number of sexual partners (mean 1.97 ± 3.09) compared to participants who used heroin (1.41 ± 2.88). Relatively the same proportion of methamphetamine and heroin subjects was involved in risky sex according to the questionnaire based on the use of protective methods when engaging multiple sexual partners. None of methamphetamine subject was positive with HIV. Only small numbers of methamphetamine and heroin subjects experienced sexual abuse or ever being raped or molested. There were 15 (12.1%) methamphetamine subjects who admitted that they had sexual obsession prior to having drug problems but only 9 (7.3%) admitted that the sexual obsession was a bigger problem than the drug problem.

Table 5.5: Sexual behaviour data for methamphetamine and heroin subjects

Independent variables	n (%)		p-value
	Methamphetamine	**Heroin**	
Sexual orientation			
Heterosexual	121 (97.6)	97 (94.2)	
Homosexual	-	3 (2.9)	p > 0.05
Bisexual	3 (2.4)	3 (2.9)	
Involvement in risky sex			
Always	11 (8.9)	7 (6.8)	
Sometimes	45 (36.3)	41 (39.8)	p > 0.05
Never	68 (54.8)	55 (53.4)	
HIV status			
Positive	-	2 (1.9)	
Negative	98 (79)	87 (84.5)	P > 0.05
Don't know	26 (21)	14 (13.6)	
Prior sexual abuse			
Yes	3 (2.4)	5 (4.9)	p > 0.05
No	121(97.6)	98 (95.1)	
Molested/Raped			
Yes	5 (4.0)	2 (1.9)	p > 0.05
No	119 (96.0)	101 (98.1)	
Sexual obsession before drug			
Yes	15 (12.1)	6 (5.8)	p > 0.05
No	109 (87.9)	97 (94.2)	
Problem with sexual obsession			
Yes	9 (7.3)	2 (1.9)	p > 0.05
No	115 (92.7)	101 (98.1)	

Table 5.6 shows the overall responses regarding sexual behaviours for all the 25 questions in the questionnaire between methamphetamine and heroin. In general both methamphetamine and heroin subjects disagreed that their sexual thoughts, feelings and behaviours are associated with the use of the drug (item SUSBS 22). However, there was more methamphetamine than heroin users agreed that their sexual thoughts, feelings and behaviours were often associated with the drug that they used (item SUSBS 22) and there was a significant difference between these two drugs ($p=0.017$). However, there was no participant who agreed and answered 'yes' to the statement regarding increase in sexual drive with the use of the drug (item SUSBS 23). There were more heroin than methamphetamine users who agreed that the use of heroin caused their sexual drive to be reduced (item SUSBS 24) and the difference was significant ($p=0.001$). More heroin users also agreed that their sexual performance was impaired (item SUSBS 26) with the use of the drug. Methamphetamine users agreed that the use of methamphetamine caused them to be more obsessed with sex (item SUSBS 29). At the same time, more heroin users reported that their interest in sex had reduced with the use of the drug (item SUSBS 30). More methamphetamine than heroin users agreed that they found themselves to be more preoccupied with sexual thoughts and romantic daydreams while being under the influence of the drug, and this difference was statistically significant (item SUSBS 45).

Table 5.6: Responses for the 25-question Substance Use and Sexual Behaviour Questionnaire for methamphetamine and heroin subjects

		Agree (Yes)		**Disagree (No)**		**Neutral**	**Chi sq df=1**	**P value**
		Meth	Heroin	Meth	Heroin			
SUSBS 22	My sexual thoughts, feelings, and behaviors are often associated with my primary substance of abuse.	40 (40.4%)	16 (22.6%)	59 (59.6%)	54 (77.1%)	58 (25.6%)	5.698	0.017
SUSBS 23	My **sexual drive** is **increased** by the use of my primary substance of abuse	0	0	102 (100%)	80 (100%)	45 (19.8%)	N/A	N/A
SUSBS 24	My **sexual drive** is **decreased** by the use of my primary substance of abuse	19 (20.1%)	31 (43.7%)	75 (79.8%)	40 (53.6%)	62 (27.3%)	10.53	0.001
SUSBS 25	My **sexual performance** is **improved** by the use of my primary substance of abuse	48 (49.5%)	42 (49.4%)	49 (50.5%)	43 (50.6%)	45 (19.8%)	0.00	0.992
SUSBS 26	My **sexual performance** is **impaired** by the use of my primary substance of abuse	26 (26.8%)	35 (41.2%)	71 (73.2%)	50 (58.8%)	45 (19.8%)	4.20	0.04
SUSBS 27	My **sexual pleasure** is **enhanced** by the use of my primary substance of abuse	50 (49.5%)	51 (50.5%)	35 (45.5%)	42 (54.5%)	49 (21.6%)	0.287	0.592
SUSBS 28	My **sexual pleasure** is **reduced** by the use of my primary substance of abuse	22 (23.2%)	28 (34.1%)	73 (76.8%)	54 (65.9%)	50 (22%)	2.622	0.105
SUSBS 29	The use of my primary substance of abuse has made me become obsessed with sex and/or made my sex drive **abnormally high**	55 (53.9%)	26 (32.5%)	47 (46.1%)	54 (67.5%)	45 (19.8%)	8.330	0.004
SUSBS 30	The use of my primary substance of abuse has reduced my interest in sex and/or made my sex drive **abnormally low**	24 (25%)	37 (45.7%)	72 (75%)	44 (54.3%)	50 (22%)	8.318	0.004
SUSBS 31	I engage in sexual behavior (e.g., intercourse, oral sex, masturbation, etc.) more frequently when using my primary substance of abuse	37 (36.3%)	27 (31.4%)	65 (63.7%)	59 (68.6%)	39 (17.2%)	0.495	0.482
SUSBS 32	I am more likely to have sex with a prostitute, pickup, other unknown partner, or someone other than my spouse or primary mate when using my primary substance of abuse	25 (23.8%)	27 (28.4%)	80 (76.2%)	68 (71.6%)	27 (11.9%)	0.551	0.458
SUSBS 33	I am more likely to practice "risky" sex under the influence of my primary drug of abuse (e.g., not use condoms, be less careful about who you choose as a sex partner, etc.).	37 (31.9%)	26 (27.1%)	79 (68.1%)	70 (72.9%)	15 (6.6%)	0.583	0.445

		Agree (Yes)		Disagree (No)		Neutral	Chi sq df=1	P value
		Meth	Heroin	Meth	Heroin			
SUSBS 34	I have become involved in sex acts that are unusual for me when I am under the influence of my primary substance of abuse (e.g., marathon masturbation, go to "peep" shows, cross-dress, voyeurism, expose yourself, etc)	19 (16.7%)	9 (9.2%)	95 (83.3%)	89 (90.8%)	15 (6.6%)	2.574	0.109
SUSBS 35	The use of my primary substance of abuse is so strongly associated with sex that I believe it will be difficult for me to separate my use of this substance from my sexual behaviour	22 (20.4%)	20 (21.7%)	86 (79.6%)	72 (78.3%)	27 (11.9%)	0.056	0.813
SUSBS 36	I am concerned that sex will not be (or has not been) as interesting or pleasurable or even may be boring without my primary substance of abuse	24 (22%)	26 (31.3%)	85 (78%)	57 (68.7%)	35 (15.4%)	2.119	0.145
SUSBS 37	Sexual fantasies or desires have previously "triggered" use of my primary substance of abuse	41 (40.2%)	28 (33.7%)	61 (59.8%)	55 (66.3%)	42 (18.5%)	0.817	0.366
SUSBS 38	My sexual fantasies or desires make is more difficult for me to stop using my primary substance of abuse	20 (17.5%)	13 (15.5%)	94 (82.5%)	71 (84.5%)	29 (12.8%)	0.149	0.7
SUSBS 39	My sexual behavior under the influence of my primary substance of abuse has caused me to question my sexual orientation (e.g., if you are heterosexual have you had homosexual fantasies or acts under the influence of your primary substance of abuse)	5 (4.6%)	5 (5.6%)	104 (95.4%)	85 (94.4%)	28 (12.3%)	0.097	0.756
SUSBS 40	My sexual behavior under the influence of my primary substance of abuse caused me to feel sexually perverted or abnormal	36 (32.7%)	25 (29.4%)	74 (67.3%)	60 (70.6%)	32 (14.1%)	0.245	0.620
SUSBS 41	My sexual behavior under the influence of my primary substance of abuse has resulted in feelings of depression	36 (35.3%)	29 (33.3%)	66 (64.7%)	58 (66.7%)	38 (16.7%)	0.080	0.777
SUSBS 42	My sexual behavior under the influence of my primary drug of abuse has resulted in feelings of shame/guilt	42 (42.9%)	26 (29.9%)	56 (57.1%)	61 (70.1%)	42 (18.5%)	3.336	0.068
SUSBS 43	I believe I need treatment for my sexual behavior as it is linked to my primary substance of abuse	46 (43%)	31 (37.8%)	61 (57%)	51 (62.2%)	38 (16.7%)	0.517	0.472

		Agree (Yes)		Disagree (No)		Neutral	Chi sq df=1	P value
		Meth	Heroin	Meth	Heroin			
SUSBS 44	Sexual thoughts and feelings almost always cause cravings for my primary substance of abuse	22 (19.1%)	24 (26.4%)	93 (80.9%)	67 (73.6%)	21 (9.3%)	1.537	0.215
SUSBS 45	I often find myself preoccupied with sexual thoughts or romantic daydreams while under the influence of my primary substance of abuse	49 (45.8%)	25 (28.7%)	58 (54.2%)	62 (71.3%)	33 (14.4%)	5.918	0.015
SUSBS 46	I often have trouble stopping my sexual behaviour even when I know it is inappropriate and/or dangerous to my health	37 (34.3%)	34 (38.2%)	71 (65.7%)	55 (61.8%)	30 (13.2%)	0.329	0.566

Table 5.7 showed univariate analysis for the answers from methamphetamine users for all the 25 questions. It appears that 6 questions produced significant difference. Methamphetamine users disagreed that their sexual thoughts, feelings and behaviours were associated with the use of the drug (item SUSBS 22). They also disagreed about the statement that methamphetamine use will reduce their sexual drive (item SUSBS 24) and disagreed that methamphetamine use will impair their sexual performance (item SUSBS 26). However, more methamphetamine users answered 'yes' and agreed that methamphetamine use will cause them to be more sexually obsessed (item SUSBS 29) and answered 'no' about methamphetamine causing them to be less sexually obsessed (item SUSBS 30). Methamphetamine users answered 'yes' about being pre-occupied with sexual thoughts or having romantic daydreams while being under the influence of the drug (item SUSBS 45).

After all the answers were adjusted for age, marital status, education level and ethnicity, it appears that 2 items were statistically significant (item SUSBS 30 and SUSBS 42) (Table 5.8). More methamphetamine users disagreed that the use of the drug has reduced their interest in sex and made their sex drive abnormally low (item SUSBS 30). Methamphetamine users disagreed about developing feelings of shame or guilt about their sexual behaviour when being under the influence of the drug (item SUSBS 42).

Table 5.7: Univariate analysis of 25 questions using Chi square for methamphetamine subjects

	Methamphetamine n (%)		Crude OR	P Value	95% CI	Chi square
	Yes	No				
SUSBS 22	40 (40.4%)	59 (59.6%)	2.29	0.017	1.15 – 4.56	5.70
SUSBS 23	0 (0%)	102 (100%)	-	-	-	-
SUSBS 24	19 (20.1%)	75 (79.8%)	0.33	0.001	0.16 – 0.65	10.5
SUSBS 25	48 (49.5%)	59 (59.6%)	1.00	0.992	0.56 – 1.80	0.00
SUSBS 26	26 (26.8%)	71 (73.2%)	0.52	0.04	0.28 – 0.98	4.20
SUSBS 27	50 (49.5%)	35 (45.5%)	1.18	0.59	0.65 – 2.13	0.29
SUSBS 28	22 (23.2%)	73 (76.8%)	0.59	0.11	0.30 – 1.12	2.62
SUSBS 29	55 (53.9%)	47 (46.1%)	2.43	0.004	1.32 – 4.47	8.33
SUSBS 30	24 (25%)	72 (75%)	0.40	0.004	0.21 - 0.75	8.31
SUSBS 31	37 (36.3%)	65 (63.7%)	1.24	0.48	0.68 – 2.29	0.50
SUSBS 32	25 (23.8%)	80 (76.2%)	0.79	0.46	0.42 – 1.48	0.55
SUSBS 33	37 (31.9%)	79 (68.1%)	1.26	0.45	0.70 – 2.29	0.58
SUSBS 34	19 (16.7%)	95 (83.3%)	1.98	0.11	0.85 – 4.60	2.57
SUSBS 35	22 (20.4%)	86 (79.6%)	0.92	0.81	0.47 – 1.82	0.06
SUSBS 36	24 (22%)	85 (78%)	0.62	0.15	0.32 – 1.18	2.11
SUSBS 37	41 (40.2%)	61 (59.8%)	1.32	0.37	0.72 – 2.41	0.82
SUSBS 38	20 (17.5%)	94 (82.5%)	1.16	0.70	0.54 – 2.50	0.70
SUSBS 39	5 (4.6%)	104 (95.4%)	0.82	0.76	0.23 – 2.92	0.10
SUSBS 40	36 (32.7%)	74 (67.3%)	1.17	0.62	0.63 – 2.16	0.25
SUSBS 41	36 (35.3%)	66 (64.7%)	1.10	0.78	0.62 – 2.00	0.08
SUSBS 42	42 (42.9%)	56 (57.1%)	1.77	0.07	0.96 – 3.24	1.77
SUSBS 43	46 (43%)	61 (57%)	1.24	0.46	0.69 – 2.23	0.52
SUSBS 44	22 (19.1%)	93 (80.9%)	0.66	0.22	0.34 – 1.28	1.54
SUSBS 45	49 (45.8%)	58 (54.2%)	2.10	0.02	1.15 – 3.82	2.10
SUSBS 46	37 (34.3%)	71 (65.7%)	0.84	0.57	0.47 – 1.51	0.33

Table 5.8: Multivariate analysis of 25 questions using logistic regression for methamphetamine subjects

	Methamphetamine n (%)		Adjusted OR	P Value	95% CI
	Yes	No			
SUSBS 22	40 (40.4%)	59 (59.6%)	1.874	0.204	0.710 – 4.943
SUSBS 23	0 (0%)	102 (100%)	-	-	-
SUSBS 24	19 (20.1%)	75 (79.8%)	1.023	0.361	0.975 – 1.073
SUSBS 25	48 (49.5%)	59 (59.6%)	1.016	0.456	0.975 – 1.058
SUSBS 26	26 (26.8%)	71 (73.2%)	1.011	0.626	0.968 – 1.056
SUSBS 27	50 (49.5%)	35 (45.5%)	1.024	0.262	0.982 – 1.069
SUSBS 28	22 (23.2%)	73 (76.8%)	1.015	0.547	0.968 – 1.063
SUSBS 29	55 (53.9%)	47 (46.1%)	1.016	0.459	0.974 – 1.059
SUSBS 30	24 (25%)	72 (75%)	1.050	0.042	1.002 – 1.101
SUSBS 31	37 (36.3%)	65 (63.7%)	1.012	0.586	0.969 – 1.057
SUSBS 32	25 (23.8%)	80 (76.2%)	1.009	0.702	0.965 – 1.055
SUSBS 33	37 (31.9%)	79 (68.1%)	1.012	0.588	0.970 – 1.056
SUSBS 34	19 (16.7%)	95 (83.3%)	1.070	0.064	0.996 – 1.149
SUSBS 35	22 (20.4%)	86 (79.6%)	1.026	0.304	0.977 – 1.076
SUSBS 36	24 (22%)	85 (78%)	1.020	0.397	0.974 – 1.069
SUSBS 37	41 (40.2%)	61 (59.8%)	1.024	0.279	0.981 – 1.070
SUSBS 38	20 (17.5%)	94 (82.5%)	0.982	0.504	0.933 – 1.035
SUSBS 39	5 (4.6%)	104 (95.4%)	1.074	0.175	0.969 – 1.19
SUSBS 40	36 (32.7%)	74 (67.3%)	1.007	0.763	0.964 – 1.051
SUSBS 41	36 (35.3%)	66 (64.7%)	0.983	0.416	0.942 – 1.025
SUSBS 42	42 (42.9%)	56 (57.1%)	0.956	0.039	0.916 – 0.998
SUSBS 43	46 (43%)	61 (57%)	0.992	0.712	0.953 – 1.034
SUSBS 44	22 (19.1%)	93 (80.9%)	0.992	0.723	0.949 – 1.037
SUSBS 45	49 (45.8%)	58 (54.2%)	1.028	0.204	0.985 – 1.072
SUSBS 46	37 (34.3%)	71 (65.7%)	1.011	0.598	0.971 – 1.053

Adjusted for age, marital status, education level and ethnicity

Table 5.9 shows the difference of means score using Mann-Whitney test. There are 7 questions that show statistical significant difference between methamphetamine and heroin. These questions are regarding lowered sexual desire (item SUSBS 24), impaired sexual performance (item SUSBS 26), lowered sexual enjoyment (item SUSBS 28), lowered sexual obsession (item SUSBS 30), worries that sexual activity will become dull and not interesting without the use of the drug (item SUSBS 36), presence of sexual fantasies or desires making it more difficult to stop using the drug (item SUSBS 38) and having sexual thoughts and feelings almost or always cause cravings for drug of abuse (item SUSBS 44). Table 5.10 shows the multivariate linear regression analysis for all the score of the questions.

5.9: Difference of means score of 25 questions using Mann-Whitney test for methamphetamine and heroin subjects

	Mean Rank		Z	P value
	Meth	Heroin		
SUSBS 22	2.74 (1.235)	2.57 (0.925)	-0.946	0.344
SUSBS 23	1.76 (0.737)	1.75 (0.801)	-0.276	0.783
SUSBS 24	2.38 (0.968)	2.90 (0.975)	-3.866	0.000
SUSBS 25	2.92 (1.200)	3.01 (1.142)	-0.494	0.621
SUSBS 26	2.48 (1.070)	2.84 (1.091)	-2.436	0.015
SUSBS 27	2.95 (1.255)	2.95 (1.106)	-0.059	0.953
SUSBS 28	2.45 (1.039)	2.74 (1.000)	-2.060	0.039
SUSBS 29	3.05 (1.306)	2.78 (1.111)	-1.719	0.086
SUSBS 30	2.49 (1.063)	2.90 (1.107)	-2.814	0.005
SUSBS 31	2.66 (1.202)	2.60 (1.088)	-0.287	0.774
SUSBS 32	2.29 (1.201)	2.39 (1.198)	-0.668	0.504
SUSBS 33	2.55 (1.399)	2.40 (1.132)	-0.395	0.693
SUSBS 34	2.06 (1.171)	1.90 (0.846)	-0.199	0.842
SUSBS 35	2.29 (1.077)	2.37 (0.970)	-1.669	0.095
SUSBS 36	2.31 (1.184)	2.64 (1.047)	-2.689	0.007
SUSBS 37	2.70 (1.162)	2.62 (1.121)	-0.537	0.591
SUSBS 38	2.11 (1.076)	2.32 (0.910)	-2.275	0.023
SUSBS 39	1.79 (0.809)	1.98 (0.828)	-1.903	0.057
SUSBS 40	2.49 (1.158)	2.56 (1.082)	-0.599	0.549
SUSBS 41	2.59 (1.169)	2.66 (1.071)	-0.516	0.606
SUSBS 42	2.73 (1.205)	2.55 (1.045)	-1.097	0.273
SUSBS 43	2.80 (1.379)	2.80 (1.199)	-0.150	0.880
SUSBS 44	2.21 (1.054)	2.47 (1.037)	-2.092	0.036
SUSBS 45	2.84 (1.226)	2.54 (1.027)	-1.800	0.072
SUSBS 46	2.66 (1.222)	2.76 (1.208)	-0.638	0.524

Table 5.10: Multivariate linear regression analysis for score of 25 questions for methamphetamine and heroin subjects

	Mean (s.d.)		Adjusted mean difference	S.E.	t	P value	95% CI
	Meth	Heroin					
SUSBS 22	2.74 (1.235)	2.57 (0.925)	1.901	0.656	2.899	0.004	0.609 – 3.192
SUSBS 23	1.76 (0.737)	1.75 (0.801)	1.128	0.446	2.530	0.012	0.249 – 2.007
SUSBS 24	2.38 (0.968)	2.90 (0.975)	1.773	0.579	3.060	0.002	0.631 – 2.915
SUSBS 25	2.92 (1.200)	3.01 (1.142)	2.200	0.969	3.159	0.002	0.828 – 3.573
SUSBS 26	2.48 (1.070)	2.84 (1.091)	1.839	0.644	2.858	0.005	0.571 – 3.107
SUSBS 27	2.95 (1.255)	2.95 (1.106)	1.670	0.703	2.377	0.018	0.285 – 3.055
SUSBS 28	2.45 (1.039)	2.74 (1.000)	2.301	0.609	3.777	0.000	1.100 – 3.502
SUSBS 29	3.05 (1.306)	2.78 (1.111)	3.030	0.730	4.154	0.000	1.593 – 4.468
SUSBS 30	2.49 (1.063)	2.90 (1.107)	2.527	0.645	3.918	0.000	1.256 – 3.799
SUSBS 31	2.66 (1.202)	2.60 (1.088)	1.479	0.681	2.173	0.031	0.138 – 2.820
SUSBS 32	2.29 (1.201)	2.39 (1.198)	0.606	0.706	0.858	0.392	-0.786 – 1.998
SUSBS 33	2.55 (1.399)	2.40 (1.132)	0.683	0.750	0.911	0.363	-0.795 – 2.162
SUSBS 34	2.06 (1.171)	1.90 (0.846)	1.682	0.613	2.744	0.007	0.474 – 2.890
SUSBS 35	2.29 (1.077)	2.37 (0.970)	2.011	0.617	3.261	0.001	0.796 – 3.226
SUSBS 36	2.31 (1.184)	2.64 (1.047)	1.931	0.674	2.866	0.005	0.603 – 3.259
SUSBS 37	2.70 (1.162)	2.62 (1.121)	1.841	0.678	2.713	0.007	0.504 – 3.178
SUSBS 38	2.11 (1.076)	2.32 (0.910)	2.268	0.596	3.808	0.000	1.094 – 3.442
SUSBS 39	1.79 (0.809)	1.98 (0.828)	0.647	0.483	1.339	0.182	-0.305 – 1.598
SUSBS 40	2.49 (1.158)	2.56 (1.082)	1.432	0.668	2.142	0.033	0.114 – 2.749
SUSBS 41	2.59 (1.169)	2.66 (1.071)	1.543	0.659	2.342	0.020	0.245 – 2.841
SUSBS 42	2.73 (1.205)	2.55 (1.045)	1.695	0.662	2.562	0.011	0.391 – 3.000
SUSBS 43	2.80 (1.379)	2.80 (1.199)	2.706	0.778	3.477	0.001	1.173 – 4.240
SUSBS 44	2.21 (1.054)	2.47 (1.037)	2.193	0.622	3.527	0.001	0.967 – 3.418
SUSBS 45	2.84 (1.226)	2.54 (1.027)	2.466	0.679	3.630	0.000	1.127 – 3.805
SUSBS 46	2.66 (1.222)	2.76 (1.208)	3.589	0.725	4.952	0.000	2.161 – 5.018

Table 5.11 shows the odds of being involved in risky sexual behaviour between methamphetamine and heroin users. Methamphetamine subjects were 1.975 more likely than heroin subjects to be involved in risky sexual behaviour.

Tabel 5.11: Odds ratio of risky sexual behaviour for methamphetamine subjects

	Meth n(%)		Odds ratio	Adjusted odds ratio	Chi square	P value	95% CI
	Yes	No					
Risky behaviour	86 (69.4%)	38 (30.6%)	1.975	1.309	6.088	0.01	1.147-3.402

CHAPTER 6

Discussion

6.1 Methodology

The general purpose of this study was to look at the pattern of sexual behaviours among non-incarcerated methamphetamine and heroin users. Specific sexual behaviours such as influence of drugs on sexual thoughts, feelings and acts, sexual desire, performance, enjoyment, preoccupation, risky behaviours and entanglement between drugs and sex were the specific objectives.

241 subjects were approached to participate in this study. However, only 227 were included into the study. The high response rate of 94.2% could be due to several reasons such as the method of data collection and study location. A convenience sampling method was applied because of higher chance of access to prospective participants (83). Convenience sampling, which is a type of non-probability sampling technique that is based on judgement of the researcher is attractive because of its low cost and ease of use (83). The researcher will continue to invite subjects to participate until the targeted sample size is reached (83). The researcher will be present at the location where high number of subjects can be expected to be around.

The major advantage of convenience sampling is the ease of implementation (83). The researcher will station himself at the AADK offices and UMCAS clinic waiting for the subjects to drop-by for their weekly appointment with the clinicians or for their monthly scheduled reporting with AADK officers. Another advantage of convenience sampling is because of its relatively low cost and shorter time to be carried out compared to probability sampling technique (83). The researcher only has three months to complete the data

collection process. A more complex sampling method may reduce the chances of enrolling the targeted sample size because the single researcher may need to make more frequent trips with longer stays at study locations, which were not feasible given the limited time and fund available to conduct the study. Another important reason of using convenience sampling for this study was because it did not require access to the formal list of population (83). The author was not authorized to access the complete list of subjects currently under AADK community surveillance programme due to legal issues. UMCAS was unable to provide their list of subjects under the methadone programme before initiation of the study because their registry was being up-dated. The use of probability sampling technique in this study may require larger budget for transportation and lodging of the researcher plus longer time of data collection period.

However, convenience sampling method can lead to under- or over-representation of particular groups within the sample (83). Another disadvantage of convenience sampling is that the selected sample is unlikely to be representative of the population being studied (83). This limits the ability to make generalization to the population (83).

The recruitment process employed in this study using walk-in subjects was unlike many of the studies in the west (e.g. (11, 56, 60, 84)) which advertised the study and were followed by data collection activities, which were part of intervention programmes like FASTLANE, EDGE and EXPLORE designed with the aim to tackle HIV-risk behaviour and promote safer sex skills. These studies had a longer recruitment and data collection period between 1 to three years resulting in a much larger number of participants.

The high response rate also could be due because of the self-rated questionnaire used in the study. Subjects were interested to participate because of the knowledge that they can complete the questionnaire on their own pace and knowing that they could verify enquiries at

the same time because of the availability of the interviewer. The presence of the interviewer to react to questions from the participants also reduced the rate of incomplete response in the questionnaire. These are the advantages that the present study has over the study by the original author (52). Self-reported questionnaire was used by Menza and colleagues (2007) to evaluate methamphetamine and sexual behaviour among Men who have Sex with Men (MSM) (85). Stall and Purcell (2000) agreed that measurement of sexual-related risk behaviour requires self-report procedures (86). However, the use of a self-report questionnaire to assess sexual behaviour creates recall bias because the vividness of a sexual event, complexity of the behaviour and emotions associated with the sexual event can impair recall (87). The use of drug during sexual behaviour may further impair memory consolidation and recall of the event. Other than that, social desirability influences on the respondents can distort accurate presentation of sexual behaviours (87, 88). Self-reported questionnaire also allowed the participants to answer sensitive and personal questions confidently.

On the downside, this study faced almost the same problems as with other studies investigating HIV-related risky sexual behaviour. These include the problem with levels of measurement and research design issues (global and situational association, event analysis), measurement error (item refusal, over- and under reporting and test-retest inconsistencies) and participation bias and social desirability (89). A more recent, sophisticated and objective data collection method for sexual behaviour and sensitive information would be by using digital devices such as video- or audio-computer assisted interview (V-CASI and A-CASI, respectively) and personal digital assistant (PDA). The use of V-CASI or A-CASI for example, may increase participants' confidence in anonymity of data collection and reduce bias reporting (90). This method was not used in the current study due to cost and logistic

reasons because the sole interviewer needed to cart around these devices to the study location whereby in studies that used these devices, the participants came to the data collection centre.

6.2 Socio-demographic characteristics

The mean age of 33.12 years for the overall participants showed that the drug problems in Malaysia still haunt those who are in their most productive lifetime period. Majority (74.5%) of the participants fell into the age between 21 to 40 years old. From this, 40.1% were in the age of 21 to 30 years old. This tallies with the monthly drug report from AADK which stated that from January to October 2011, the bulk of drug abusers recorded by National Drug Information System (Sistem Maklumat Dadah Kebangsaan-BIONADI) were those in the age between 19 to 24 years old and 77.67% were youths between the age of 19 to 39 years old (91). If the age variable is grouped by type of drug use, the mean age for methamphetamine subjects were lower (29.01 ± 7.19) than heroin subjects (38.08 ± 8.42) and this difference was statistically significant ($p<0.05$). Majority (54.8%) of methamphetamine subjects were in the age group between 21 to 30 years old while 63.1% of heroin subjects were in the age group between 31 to 50 years old. The difference in the mean age and also the age group of the majority of the subjects for the two drugs could act as a confounder for the findings of this study. The mean age of methamphetamine subjects in this study is higher compared to the mean age of methamphetamine users in the study by Degenhardt and Topp (2003) which was 24.7 ± 6.3 (2). The mean age of heroin subjects was consistent with those reported from a Malaysian study which was 37.2 ± 9.1 (92). For ethnic distribution, Malays were the majority of the participants. Even if it is separated according to the type of drug being used, Malays were still the dominant ethnic group for both methamphetamine and heroin. Methamphetamine was also common among the natives of Sabah while heroin was

being used also by the other two major ethnic groups in Malaysia, namely Chinese and Indians. The problem of drugs among the Malays is not new because for years, majority of drug users in Malaysia are Malays. From 2006 till 2010, there were 18 693 Malay drug abusers as compared to only 2 279 Chinese and 2 037 Indian drug abusers for the same time period (93). However, what was more alarming was the high drug use among the natives of Sabah. Although, the present study only collected data from Kota Kinabalu, the high number of methamphetamine subjects among Kadazan-Dusun, Bajau and other ethnics of Sabah such as Suluk, Iban and Lundayeh was a cause for concern.

Majority of the overall participants were single (54.2%) and stayed with their original family (52.9%). This is also true even if the participants were divided into methamphetamine or heroin group. However, it should be noted that most of the participants still have a family with them, either their own biological family or family with their spouse/partner. This could mean that even though they were drug abusers, they nevertheless have family support and this could be because of their willingness to participate in the treatment and rehabilitation programme. In terms of employment, there were more employed participants compared to those without works although some were only on part-time employment. Overall, most participants worked in the services' field doing the job such as drivers, security guards, kitchen helpers and waiters. A portion of participants who took methamphetamine also worked as labourers or involved in the manual type of job such as farmer or construction workers. The type of jobs which were done by the participants correlated with the highest level of education that was attained as many of them reached higher secondary school level meaning they at least had sat for a major national examination- Sijil Rendah Pelajaran/Penilaian Menengah Rendah when they were in Form 3. This qualification plus Sijil Pelajaran Malaysia (Malaysian Certificate of Education) that was taken in Form 5 will allow them to work in unskilled, manual-type of employments. Majority of the participants

were also earning up to RM 1 500 per month. Those who used methamphetamine were mostly earning only between RM 501 to RM 1 000 per month compared to heroin users who earned up to RM 1 500 per month. However, it should be noted that the methamphetamine subjects were collected from Kota Bharu, Kelantan and Kota KInabalu, Sabah while the samples for heroin group were collected from Kuala Lumpur where the chances of larger salary were higher mainly due to its 100% urbanization rate which provided wider range of occupation. AADK mentioned in their yearly drug information report that between 2006 and 2010, a large bulk of drug users were those involved in the labour-type of employment followed by those working in the service-type of employment (93). The drug agency also reported that majority of drug abusers in the past 5 years were those who completed Form 3 and held Sijil Rendah Pelajaran.

6.3 Drug use

Overall, the mean duration of drug use was 8.2 ± 7.7 years. As expected, majority of the participants preferred smoking as a method of administration followed by injection. Both methamphetamine and heroin were primarily smoked/chased by the subjects. Although Malaysia has an estimated 170 000 injecting drug users (IDUs), only 4.3% of the 15 645 who entered treatment were reported to be IDUs. The method of injecting methamphetamine was only first reported in Malaysia in the year 2009 and while heroin injection was also common, the injecting use of heroin was reported to have decreased in 2009 (32). From January to October 2011, all of methamphetamine cases (1 034; 71.56%) reported to AADK were using the drug through smoking/chasing method, 411 (28.44%) cases were using the drugs by swallowing the substance, and none was injecting methamphetamine. Smoking/chasing or ingesting methamphetamine is the usual pattern of administration in Southeast and East Asia

(29). This differs from the use of methamphetamine in Europe where injecting methamphetamine has historically constituted as an important component of the methamphetamine problem (94). The same report also noted that 3 493 (93.37%) heroin cases were administering the drug through the smoking/chasing method compared to only 248 (6.63%) who injected it (91).

Motives of methamphetamine use in this present study differed from heroin. Methamphetamine subjects claimed they used the drug largely for social and working purposes. Heroin users reported that the motives of use were due to own curiosity and for social purposes. AADK reported that the most common motives for drug use were related to influence of friends, own curiosity and also for fun and social reasons. It seemed that methamphetamine was not the preferred amphetamine-type substance 'party drug'. This could be because MDMA which is also known as 'ecstasy' is the 'party drug' in Malaysia. However, there was an Australian study of 'ecstasy' users moving to crystal methamphetamine (95). The use of methamphetamine for work is a great concern because the methamphetamine subjects in the present study were those employed as drivers, including heavy truck and public transport drivers. This is because driving behaviour and motor vehicle accidents among out-of-treatment drug users is characterized by previous consumption of illicit substances which will influence driving performance and accident risk (96).

Co-morbid drug use is a common phenomenon. In the present study, a large proportion of participants were poly-drug users. However, when the participants were grouped into the type of drug used, most methamphetamine subjects were noted only to use alcohol together with it. The use of alcohol together with methamphetamine was expected because alcohol use is part of the way of life for the natives of Sabah and Sarawak (97). This was different from studies from Western countries, which noted that medications such as

Sildenafil and Tadanafil were the most commonly used substance with methamphetamine (98, 99).

6.4 Sexual Behaviour

As mentioned earlier, most of the previous studies regarding sexual behaviour focused on determining risky sexual behaviour in a particular population of methamphetamine-using subjects and only a very small number of studies talked about sexual and risky sexual behaviour among heroin users. Many previous studies also focused the topic of sexual behaviour in homosexuals and its association with the drugs. These studies were done in Western countries such as United States of America and European countries where there were large population of homosexuals. Relatively small number of studies exploring sexual behaviour was done in Asian countries, especially South-East Asian countries where the culture and social variables are different from the West. Studies regarding sexual and risky sexual behaviour are rarely done especially in a Muslim dominated country such as Malaysia or Indonesia. The current study is an attempt to explore and document data that is considered personal and sensitive in a society that still put high regards on conservative religious and cultural values.

As expected, majority of the participants were heterosexuals, although a very small number were homosexuals and bisexuals. This could be the representation of the Malaysian society who is sexually conservative. In addition to that, Malaysians are governed by the use of Section 377A of the Penal Code which considers any sexual connection that involves the introduction of the penis into the anus or mouth of others as an act of carnal intercourse against the order of nature (100). Even if the sexual orientation was grouped according to methamphetamine and heroin use, heterosexual was still the dominant sexual orientation. This is unlike the Western studies where 6 to 17% of methamphetamine users were Men who

have Sex with Men (MSM) (101). The participants in this study have a mean of 1.7 ± 3.0 sexual partners in the past 6-month. This suggested that the participants have more than one regular partner. Having more than one sexual partner by making them as wives are allowed in Islam and this probably maybe one of the reasons as the data was collected in Kelantan which is a Malay and Muslim-dominated state in Malaysia. However, unlike some studies, the specific type of sexual partner was not verified in the present study. It may be assumed that having more than one sexual partners means that the participants could be having another wife or having sexual intercourse with non-regular partner such as friends, strangers or commercial sex workers. Methamphetamine subjects have a higher mean of sexual partners compared to heroin subjects. This was expected because methamphetamine use is associated with risky sexual behaviours including having multiple sexual partners (8). The numbers of sexual partners for methamphetamine users were higher in studies that involved Men who have Sex with Men (MSM) and Men who have Sex with Men and Women (MSMW) (12, 102).

In general, many studies have shown that the type of drug that was used by the substance abusers do influence sexual behaviours. Sex under the influence of drugs, especially stimulants have been associated with increased involvement in sexual risk behaviour (103). The drugs can influence either to increase or decrease sexual function and characteristic. In this present study, the drugs influence on the sexual thoughts, feelings and behaviours were reported more by the methamphetamine group compared to the heroin group. Many studies have reported about the motives and degrees of association between methamphetamine use and sexual scenes and these studies mainly showed positive connection between methamphetamine and sex (56, 93, 94). However, it cannot be clearly ascertained in what way or what direction did methamphetamine influence the sexual behaviours in this study. This was because the other questions regarding sexual drive,

performance and pleasure did not reach statistical significance between the two drugs except questions regarding drug decreasing and impairing sexual drive and performance. This could be because the motives for drug use in the present study was for social reason and work, unlike those in Western studies where subjects used drugs like alcohol, methamphetamine, 'ecstasy' and cocaine specifically for sexual purposes (10, 104). In fact, none of the participants in the present study from either group agreed that their sexual drive was increased with the use of the drug. The only similarity of finding between the present study and the study using the same instrument was regarding the influence of methamphetamine on sexual thoughts, feelings and behaviours (52). Both studies found that the use of methamphetamine will influence those variables. The present study also did not able to replicate the positive associations between components of sexual behaviour in a follow-up study by Brown and colleagues (2005) using the same instrument (53). Methamphetamine users in the study by Brown et al. (2005) reported strong positive associations between methamphetamine and sex with increased in sexual thoughts, sexual activity and more positive sexual effects (53). However, Kopetz and colleagues (2010) reported that the use of stimulants such as cocaine may in fact caused reduction in sexual desire and performance and its use was only due to social context like having the opportunities for sex (83).

The abnormally high sexual obsession, interest and drive when being under influence of methamphetamine conformed with the finding by Brown and colleagues (2005) (53). Earlier, Shoptaw et al. (2002) found that the use of methamphetamine among MSM and MSMW could made sexual behaviour more compulsive (102). They also found that these subjects were also having difficulty in controlling their methamphetamine use and were concerned about their sexual behaviour. Exner and colleagues (1992) also found that methamphetamine users had problems controlling their sexual behaviour (37). The obsession towards sex was a consequence of integrating methamphetamine with sexual behaviour and

the methamphetamine use will be more of a problem than the sexual behaviour itself (102). High sexual interest and drive with the use of methamphetamine may later facilitates sexual excitement (46). The obsession and compulsion in the interest and drive of sex with the use of methamphetamine could be due to factors such as impulsivity and the sense of losing control (55, 105). Impulsivity and methamphetamine use has been postulated to cause the user to have higher number of sexual partners and engaging in more unprotected vaginal and anal sex (105).

As mentioned earlier, there is a dearth of studies regarding sexual behaviour among opiate (heroin and morphine) users. This is because heroin or morphine is not the drug of choice for sexual activity unlike stimulants such as cocaine and amphetamine/methamphetamine group. The dependency on opiate such as heroin has negatively affect sexual behaviour of heroin subjects in this present study. The heroin subjects reported statistically significant agreements on questions about negative effect on their sexual behaviour from the use of the drug. Long-term and large dose of opiate use impairs the neuroendocrine system and leads to the inhibition of gonadotrophin-releasing hormones (106). This will lead to decreased testosterone in men and a reduction in sexual drive and desire. Larger doses and chronic use of opiates, including heroin have been found to negatively affect libido through suppression of luteninizing hormone which will decrease the testosterone levels (15, 49). Heroin users were also known to misuse other substances and this mixes of substances with adulterants and different level of impurities could lead to the reduction in sexual drive by impairing neuroendocrine system.

However, the statistically significant difference in the mean age between methamphetamine and heroin subjects in this study could act as a confounder when comparing about the different effect of the drugs on sexual behaviour. Methamphetamine was used by a relatively younger group of subjects compared to heroin. The reduction and

impairment of sexual drive, performance and interest among heroin subjects could possibly be due to aging process. Sexual activity decreases with age and about half of those who are sexually active in older age reported at least one bothersome sexual problem (107, 108). Increasing age is also one of the independent factors associated with reduced odds of sexual activity (109).

Participants for both methamphetamine and heroin group mostly claimed that they never got involved in risky sexual behaviour. Frequency of risky sexual behaviour in this present study asked about using protection in intercourse with multiple partners. However, a staggering 45.2% and 46.6% of methamphetamine and heroin subjects respectively, answered that they either always or sometimes got involved in risky sexual behaviour. The present study found that the odds of methamphetamine subjects to be involved in risky sexual behaviours were 1.975 more than heroin subjects. This high likelihood may perhaps caused the high number of efforts to study sexual and high risk sexual behaviour among methamphetamine users. Methamphetamine use remained a correlate of sexual risk-taking behaviours (54). The high likelihood for risky sexual behaviour in the present study should drive more local study to examine the risky sexual behaviour with a more detail and objective way. This is because the definition of risky sexual behaviours varies between studies. The scope of risky sexual behaviour has been used to encompass the age of sexual debut, number of sexual partners, the type of sexual partners, the type of sexual acts and also the use of barriers and protections during sexual intercourse. This present study grouped together high risk sexual behaviours namely engaging in intercourse, having oral sex, performing masturbation, having sex with someone other than regular partner, not using protection and involving in unusual sexual acts such as sexual marathons, peeping show and voyeurism.

CHAPTER SEVEN

Strengths and Limitations

7.1 Strengths

The strongest point of this study was the decision to collect data from non-incarcerated and non-institutionalized drug users. Drug users who were not in prison or detained in drug rehabilitation centres have already returned to normal life. These subjects were free to live their individual life. They arranged their own accommodation, chose their preferred occupation and ran their personal daily activities and there was no pressure on them to answer the questionnaire. Their answers were also not only based on recall and experiences in the past but included current sexual practices and experiences.

Drug-related offences are major criminal offences in Malaysia and those arrested will be detained for a period of time in the prison or drug rehabilitation centre according to the governing laws. This has caused the data collection for studies on drug problems in Malaysia to be concentrated in prison and drug rehabilitation centre. Inmates or in-patients of the rehabilitation centre need to follow and abide to stipulated rules and regulations of the place. Prison inmates and detained drug abusers may feel obligated to participate in studies held in these places because their daily life is institutionalized and regimented according to the rules and regulations of these places. All of them live the same way without individual variation.

The present study gave a chance for the participants to explore their own sexual function and behaviour and evaluate how their sexual behaviour entangled with their drug-using activity. This reason motivated many of the subjects to participate. They were also assured regarding the privacy and confidentiality of participation. The presence of the author at the

study location gave the opportunity for participants to raise questions and clarify enquiries and doubts while answering the questions.

The main instrument used in this study was translated and validated for use in Malaysia. This meant higher reliability in the response of the participants. The selection of the study location was done after discussion with experts and the study locations were well-known to have high number of subjects who primarily used methamphetamine and heroin.

7.2 Limitations

Although the total number of sample was 227, this was small when compared with previous studies that had reported more statistically significant results. The small number of sample could be because this study did not offer any additional incentives other than exploration of participant's own sexual behaviour. Many previous studies were done together with sexual risk behaviour intervention programmes that offered either multiple individual or group counselling sessions. There were several studies that offered small token of money or coupons that were exchangeable for groceries. No intervention was possible in the current study because of the limited resources, time and capability of the author.

The small sample size was also the result of limited manpower to collect the data. Only one person was doing data collection process. The availability of more personnel in data collection would help in getting bigger number of sample in shorter period of time, and subsequently reduce the cost of travelling and lodging at study locations.

Another limitation of this study was the method of recruitment. Recruitment was done only on those coming to AADK office for scheduled reporting or consultation with clinician at UMCAS. There must be a lot more subjects who were left out of the recruitment process.

This could be due to legal issues regarding drug-taking behaviour. Many people are afraid to admit abusing drugs because of a possible persecution by the authority. This reason may hinder them from coming to drug rehabilitation programme and subsequently participate in the study.

The convenient sampling was not the best sampling method to be applied. The use of convenience sampling can lead to under- or over-representation of particular group within the sample. Convenience sampling is unlikely to be representative of the population being studied and causes problem in generalizing the findings to the population being studied. Given proper access to a formal list of subjects under AADK community surveillance programme and UMCAS methadone programme, the author preferred to use a probability sampling technique to produce statistical inferences from the sample being studied to the population of interest. However, time, cost and human resources constraint had made random sampling quite impossible. Smaller number of participants is expected if random sampling is used. The process of getting larger number of participants will need More researcher need to be involved to collect larger number of participants. This needs more money to be spent and it was not possible due to limited allocation from the academic institution.

There was also limitation to do direct comparison of the findings with results from previous studies. Different methodologies and instruments used did not allow the specific findings to be compared. However, the author had tried to compare the findings with the study by the original author of the questionnaire (52) and a subsequent follow-up study (53).

This study also faced the common problems resulting from the use of self-report questionnaires. The author could not be completely sure regarding the reliability of the answer although the questionnaire has been translated and validated for local population. Because of this, the author was present when the participants were answering the

questionnaire. The response of the participants may also reflect some degree of social desirability, especially in a society which is uncomfortable when approached about sensitive matters such as sex and drugs. The responses also might be influenced by the experience of using several other substances. It was near impossible to look for absolutely ‘clean’ participants who only use a single substance, so it was emphasized to the participants that the questions were regarding a main and primary drug of abuse.

CHAPTER EIGHT

Conclusion and Recommendations

8.1 Conclusion

This present study is an attempt to describe the pattern of sexual behaviour among non-incarcerated and non-institutionalized male methamphetamine and heroin dependents who attended drug treatment and rehabilitation clinic. It was found that more methamphetamine than heroin subjects reported some association between their sexual behaviour and drug use. However, methamphetamine subjects only reported changes in terms of increasingly high sexual pre-occupation and interest in relation to the drug use. Similar to other studies, individuals who used methamphetamine were more likely to be involved in risky sexual behaviour. Heroin subjects reported negative association regarding their sexual behaviour with the use of the drug, most significantly in terms of sexual drive, performance and interest. Unfortunately, the findings of this study may have difficulty to represent the population being studied due to the use of convenience sampling. The use of probability sampling technique may be able to generalize the findings into the population being studied.

8.2 Recommendations

Recommendations from this study are:

1. Personnel involved in drug treatment and rehabilitation programme should explore participants' sexual pattern and behaviour more than just asking about involvement with multiple sexual partners and use of barriers during sexual intercourse. This is because aspects of sexual behaviour cover wider range of items and are not just confined to physical aspects of sexuality. The personnel in-charge in the rehabilitation

programme can use a self-report questionnaire rather than face-to-face interview in assessments of sexual behaviour.

2. More detail information on the effects of drugs on sexual behaviour should be included in the local drug rehabilitation programme especially methamphetamine rehabilitation programme due to the lack of information on this topic in the existing programme.

3. Consider giving a more refined intervention programme including individual counselling session on sexual behaviour with regards to drug use and this programme should emphasize on promoting safer sex skills to reduce high-risk sexual behaviour.

4. A prospective study should be done in the future to evaluate causation for the pre-occupation and high sexual drive among methamphetamine users.

5. A follow-up study should be undertaken to assess sexual hypofunction among methamphetamine and heroin users.

6. Development of a comprehensive instrument for use in both research and clinical settings on sexual behaviour among drug users. This should include proper definition of sexual behaviour and not only restricting it to high-risk sexual behaviour. Attention should be given on the aspect of hypersexuality and paraphilias.

7. Future local studies should compare sexual behaviour among different sexual groups of drug users such as heterosexuals, MSM and MSMW.

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