

**YANGON UNIVERSITY OF ECONOMICS
MASTER OF DEVELOPMENT STUDIES PROGRAMME**

**A COMPARATIVE STUDY ON HEALTH AND SOCIAL
CONDITIONS BETWEEN METHADONE CLIENTS AND
NON-METHADONE CLIENTS IN HPAKANT TOWNSHIP,
KACHIN STATE**

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EMDevS - 42 (15th BATCH)**

AUGUST, 2019

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KACHIN STATE**

A thesis submitted in partial fulfillment of the requirements for the
Master of Development Studies (MDevS) Degree

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ABSTRACT

The methadone treatment sites have been expanded gradually in Myanmar; however, the coverage of Methadone Maintenance Treatment (MMT) remains low and lack of social support discouraging drug users from accessing essential health services. The objectives of this study are to identify social inclusion conditions and examine drug use related health problems between non-methadone and methadone clients. This study uses descriptive methods with quantitative approach. Primary data were collected through face-to-face interviews with a hundred methadone clients and a hundred non-methadone clients. The results reveal that after methadone treatment, higher proportion of clients attained good social inclusion within their social network, consequent support contributes to the reduction of overdoses, arrests, and drug related crime. Although drug use related harms exist in both groups, MMT clients reduced frequency of drug use and risk behaviors. Their health seeking behavior becomes higher. Findings confirm that there are significant improvements of quality of life among drug users after taking MMT. The study recommends vulnerable populations without social support should be better served.

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LIST OF ABBREVIATIONS

CCDAC	Central Committee for Drug Abuse Control
CDC	Centers for Disease Control
DDTRU	Drug Dependency Treatment and Research Unit
DTC	Drug Treatment Centre
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
IBBS	Integrated Biological and Behavioral Survey (IBBS/PSE)
IRID	Injecting- related injuries and diseases
MMT	Methadone Maintenance Therapy
MOHS	Ministry of Health and Sports
MSM	Men who have Sex with Men
NAP	National AIDS Programme
NPS	New Psychoactive Substances
OST	Opioid substitution therapy
PWID	People Who Inject Drug
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNODC	United Nations Office on Drugs and Crime
WHO	World Health Organization

CHAPTER I

INTRODUCTION

1.1 Rationale of the Study

Psychotropic substances have been used by humans since the beginning of civilization. Since psychoactive drugs have the potential to alter perception, mood, motor co-ordination, consciousness and judgment, they are valued as physical, and often symbolic, goods. Historically, drugs were consumed by humans for various reasons: pain relief and medicinal purposes, physical stimulation - particularly by those engaged in laborious jobs, as food during times of famine or food shortage, relaxation, pleasure (or recreation), and as a commodity that could be exchanged in bartering. In many traditional societies, particularly tribal and village communities, drugs were also used in religious rituals. As production and consumption of psychotropic drugs increased world-over between the sixteenth and nineteenth centuries, due to a multitude of factors including colonization and the quest of western empires to boost their revenues, as well as scientific and technological advancements, so did knowledge on the toxicity of these substances. United Nations (UNODC, 2018), reported that, from 2016 to 2017, global opium production increased dramatically, by 65 percent (10,500 tons) and it hit highest record of estimated opium production since the beginning of twenty-first century. Along with this increased drug market, drug use problem around the world expand in a supply-driven manner. The report also stated that, among others, there are estimated 19.4 million opiate users in 2016, globally (UNODC, 2018).

With rising addiction rates associated with some drugs, it became evident to some in the early twentieth century that psychotropic drug use and production needed some form of regulation. Attempts to control and eradicate drugs currently classified as illicit are justified by the fact that there are harms (perceived, real and potential) to individuals and communities associated with any drug and its use. These harms will differ depending on the type of drug used and mode of administration, as well as the

inherent biological characteristics of the individual and the socio-cultural context within which it is used. For example, the stigma and discrimination often associated with drug use do not stop from use of the drug itself, but from social norms and values.

Illicit drug use has long been recognized as a major global public health issue. Dependence on illicit opiates is a serious condition, which is currently associated with severe morbidity, it causes a lot of psychological and physical health consequences, such as depression, anxiety, psychosocial dysfunction, fatal and nonfatal overdose, and increases the risk of HIV transmission, other blood-borne diseases and economic consequences of people in many countries affecting development. Heroin and opium are short-acting opiates with a marked tendency to develop a dependence syndrome in the user, when used in a recreational manner for their euphoric or analgesic properties. In addition, the mode of administration of these drugs may generate a risk of drug overdose or the transmission of blood-borne viruses. The fact that heroin and opium are illicit and often expensive contributes to the criminal behaviors associated with their use—primarily acquisitive crime and drug trafficking. The dependence syndrome is often associated with substantial behavioral changes, which have their own social cost. For example, the individual's interest in other activities, relationships and their own health diminishes.

People who inject drugs (PWID) are persons who use syringes to intravenously inject drugs directly into their blood veins. Sharing of contaminated needles and other drug paraphernalia is a particularly efficient way of exchanging blood and of transmitting the blood borne virus infections from infected person to uninfected users. The majority of countries in the region have a significant injecting drug use problems and several countries have reported much higher national HIV prevalence rates among people who inject drugs (PWID) – most notably Indonesia, Myanmar, Nepal, Thailand, and some regions of India. High-risk behaviors made by people who inject drugs (PWID), such as sharing of contaminated needles and syringes, has become a major determining factor in the course of the HIV epidemic.

Estimated numbers of people who use drugs suffer from drug use disorders, meaning that their drug use is harmful to the point where they may need treatment were 28.7 million in 2016 report and 29.5 million in 2017 (UNODC, 2018). Roughly 450,000 people died because of drug use in 2015 (WHO, 2018a). Of those deaths, 167,750 were directly associated with drug use disorders (mainly overdoses). World

Health Organization estimated 11 million people who inject drug (PWID) around the world and of those, 1.3 million and 5.5 million are infected with HIV and HCV respectively and 1.0 million co-infected with both HIV and HCV. (WHO, 2019)

While the drug problem is affecting almost all countries around the world, lower and lower – middle-income countries are being affected disproportionately and Myanmar is one of them. Myanmar is second largest opium production in the world and there are thousands of injecting drug users based on recent reports Myanmar Opium Survey 2019 (UNODC, January 2019) . Poppy cultivation is primarily concentrated in the mountainous areas of Shan and Kachin States. In Myanmar, this use of injection form of opiate is seriously affecting health of the drug users by HIV, HCV and Hepatitis B widely, through sharing of used needles and syringes, in addition to lethal overdose. Recent estimates from Integrated Biological and Behavioral Survey and Population Size Estimate (IBBS/PSE) on PWID, 2017 report (NAP, 2018), stated that there are 93,000 PWID estimated in Myanmar. The survey results informed 34.9% (7.6% – 61%) HIV prevalence among PWID and 56% (27% - 85%) HCV prevalence, and both are significantly higher than all other risk groups like female sex workers (FSW) and men who have sex with men (MSM) in the country (UNAIDS, 2018).

To respond to this major public health crisis, the Drug Dependency Treatment and Research Unit (DDTRU) and the National AIDS Programme (NAP), Myanmar Ministry of Health and Sports (MOHS) have also addressed this drug use issue and related adverse health consequences as a national public health thread and responded through strategic planning as well as provision of several harm reduction services. Those include promoting and provision of quality services, screening of infections and treatment for PWID for reducing drug related health consequences as well as reduction of social harms. The needle and syringe exchange services are provided for reducing needle sharing practice and opioid substitution therapy (OST) using methadone is delivered for reducing opioid injection practice and health consequences. Those services are provided and expanded as the key activities as per the guidance of National Strategic Plan on HIV and AIDS in Myanmar (2016 – 2020) (MOHS, 2017). The Opioid Substitution Program (OST) program using methadone, known as Methadone Maintenance Therapy (MMT), has been established by DDTRU since 2006, and has been expanded gradually. It reported that MMT has been provided through 51 MMT sites in six States and Regions by the end of 2017. The

main objectives of methadone maintenance therapy are to reduce the frequency of illicit opioid uses, to improve the socioeconomic conditions of drug users, to become stabilized and productive lives and to reduce drug related harms. Myanmar MOHS have committed and funded US\$ 1 million for procuring methadone every year (MOHS, 2017). The report (DDTRU, 2017) stated that 13,441 PWID were actively receiving MMT across the country, accounting for 14.5% of the estimated PWID.

New HIV infection among PWID population contributed 29% of total national HIV incidence in 2017 results (NAP, 2018). Among PWID reporting never being tested for HIV, overall HIV prevalence was notably higher (41%), with a majority testing positive in Hpakant (54%). The report indicated that the transmission occurred through practice of sharing used needle and syringes among PWID (NAP, 2018). This fact highlights the critical need of investing and addressing the prevention of drug use, harm reduction work, scale up and increased retention of people on MMT, lowering drop-out and relapse to injecting opioid use.

In spite of the efforts made, the coverage of MMT still remains low and low retention on the treatment has also been an important concern in some of the MMT facilities since the reported 6 months' retention varies from 27% - 89% in 46 MMT facilities, in 2016 (DDTRU, 2017). Several accessibility barriers were observed for this low coverage and retention in different areas, which include but not limited to, transportation, population migration, unemployment, low acceptance by the local community, armed conflicts among ethnic armed groups in some remote areas etc. Moreover, adhering to such a long term as well as supervised daily dose regimen would need significant motivation of the clients. This motivation for adhering daily regimen could only come from the positive impacts on the life of people, including good health, acceptable social and the economic circumstances, which should be brought in by the intense intervention, over the long duration of adhering to the treatment.

Hence, it is not enough to invest only for the expansion and scale up just by using more resources for infrastructure and purchase of commodity. Firstly, understanding and literacy of community on the benefits of harm reduction needs to be addressed. Furthermore, strengthening linkages and harmonizing the MMT, social support and rehabilitation services is also critical since comprehensive approach is crucial to reintegrate the clients into their families and society to improve the social and economic productivity of the clients. However, rehabilitation support is not

adequately available in the country, though harm reduction component of National Drug Control Policy stated rehabilitation and social reintegration intervention as the key interventions (CCDAC, 2018). At present, only a few civil society organizations and faith-based organizations are running small-scale rehabilitation centers and some of those are working as detention centers without proper or available medication for withdrawal symptoms.

Multi-stakeholders' involvement, engagement of and coordination between different departments and ministries are necessary to expand rehabilitation and social reintegration services, and increased capacity of the staff and budget availability, is also essential.

Only 14.5% of PWID received methadone maintenance treatment, which is an effective measure in preventing injection drug use and its health, social and economic consequences. High discrimination and lack of social support discouraging drug users from accessing essential health services, including HIV prevention and treatment services. Although many researches were conducted the effect of methadone globally, very limited researches and studies were found to be conducted locally. Local evidences pointing towards positive effects of the methadone maintenance treatment specifically on the population in Myanmar is required to advocate for further methadone treatment expansion, increase investment through increased domestic and international funding, human resource in the country as well as to promote trust by the community.

1.2 Objectives of the Study

The objectives of the study are:

- 1) To identify social inclusion conditions between non-methadone and methadone clients
- 2) To examine drug use related health problems between non-methadone and methadone clients

1.3 Method of Study

Descriptive method is used in this study. Both primary and secondary data are used. Primary data is collected by doing in depth interviews with structured questionnaires. The secondary data are obtained from UNODC, WHO, National

AIDS Program, Drug Treatment Centers, CCDAC, reports and websites. Simple random sampling techniques was used.

1.4 Scopes and Limitations of the Study

This study only focus on people who inject drug (PWID) who with and without methadone maintenance therapy. The study area is conducted Hpakant Township, Jade Mine, Kachin State, Mohnyin District, the northern part of Myanmar, which has a high prevalence of people who inject drugs. The required sample size was calculated by the formula of *Taro Yamane, 1967* (Finite population). According to the sample size calculation, the required minimum sample size was (97.43) and (94.87) at (90%) confidence level, (CI) and 10% margin of error. Therefore, 100 respondents from each group (methadone and non-methadone groups) are approached to get quality data. Study period is from 2015 to 2018.

The limitation of the study is that it is covered one hundred selected methadone clients from total 1852 clients and one hundred selected non-methadone clients from 3793 non-methadone clients at Hpakant due to limited time.

1.5 Organization of the Study

This thesis describes with five chapters. Chapter (1) is the introductory chapter with rationale, objectives, method, scope and limitation, the organization of the study. Chapter (2) presents literature review on overview of drug use problem, nature of opioid use, misuse and dependence, drug related harms to health among PWID, social well-being among PWID, harm reduction implementation programs and methadone maintenance therapy, and reviews on previous study. Chapter (3) presents the overview of condition drug use, drug related harms to health among PWID in Myanmar, harm reduction in Myanmar, Overview of drug use situation in Hpakant, drug related harms to health in Hpakant and Methadone Maintenance Treatment in Hpakant Township. Chapter (4) describes survey findings which show the comparison between methadone clients and non-methadone clients by comparing with 4 sections (i) socio-demographic characteristics, (ii) social inclusion characteristics (iii) characteristics on drug use and practices (iv) characteristics on health problems. Chapter (5) included findings and suggestions for the study.

CHAPTER II

LITERATURE REVIEW

2.1 Overview of Drug Use Conditions

Drugs such as heroin and cocaine that have been available for a long time increasingly coexist with new psychoactive substances and prescription drugs. A growing stream of pharmaceutical preparations of unclear origin destined for non-medical use, together with poly drug use and poly drug trafficking, is adding unprecedented levels of complexity to the drug problem. In 2017, an estimated 271 million people, or 5.5 per cent of the global population aged 15–64, had used drugs in the previous year. Globally, over 11% of people who used drugs (or around 30.5 million) are engaged in problematic use. This means that their drug use is harmful to the point that they may experience drug dependence and require treatment (Degenhardt L, et al (2017)). In 2009, the past-year prevalence of drug use globally was estimated to be lower, at 4.8 per cent. Between 2009 and 2017, the estimated number of past-year users of any drug globally changed from 210 million to 271 million, or by 30 per cent, in part as a result of global population growth (the global population aged 15–64 increased by 10 per cent). (UNODC, 2018)

The potential of the opium poppy to produce euphoric states has been known for thousands of years. Documentation shows that the Sumerians in the lower Mesopotamia used this plant as early as 3400BC. Ever since, people have traded it in many parts of the world. People’s knowledge of the analgesic property of opium poppies was documented in Egypt in an “Ebers Papyri” document describing the treatment of children who suffered from colic. Hippocrates in 460BC also used opium for treating internal diseases, diseases of women and epidemics. Since this period, the use of opioids for recreational, spiritual and medical purpose has been intertwined. Opioid substances have passed through various regulatory stages; from no control and legal production and distribution to strictly controlled legal production and distribution, with co-existing illicit production and sale.

Opiates are a group of psychoactive substances derived from the poppy plant that includes opium, morphine, codeine and some others. The term “opiate” is also used for the semisynthetic drug heroin that is produced from poppy compounds. The term “opioids” refers to opiates and other semisynthetic and synthetic compounds with similar properties. Opioids are dependence producing substances, which elicit their effects by activating opioid receptors in the brain. Frequent and regular administration is associated with tolerance and physical dependence, which may develop into addiction. Its use includes treatment for acute pain, such as in severe physical trauma, myocardial infarction, post-surgical pain, and chronic pain, including end-stage cancer and other terminal illnesses. The biological half-life of heroin is about 3 to 5 hours, depending on the dose. Heroin and opium are short-acting opiates with a marked tendency to develop a dependence syndrome in the user, when used in a recreational manner for their euphoric or analgesic properties. Because of its short-acting characteristics, tolerance among chronic heroin users can develop rapidly and withdrawal syndromes can be experienced very quickly and quite intensively. Withdrawal symptoms include watering eyes, runny nose, yawning, sweating, restlessness, chills, cramps, muscle aches. However, this unpleasant withdrawal syndrome is not life threatening.

World Health Organization as the use of a substance defines drug misuse for a purpose not consistent with legal or medical guidelines. It has a negative impact on health or functioning and may take the form of drug dependence, or be part of a wider spectrum of problematic or harmful behavior. Drug misuse is when you take drugs that are not legal. Drug misuse differs from addiction. Many people with drug misuse problems are able to quit or can change their unhealthy behavior. Any drugs, medications, or other substances that trigger the state of consciousness, euphoria, or both could be abused and result in addiction. These types of drugs are found across a spectrum of compounds and are not limited to only illegal substances. Legal drug abuse often occurs with prescriptions that individuals obtain from their physicians. Rather than follow the dosage instructed, they take more. Patients often become addicted to medications by accident as well. Benzodiazepines such as Klonopin and Xanax, for instance, can be prescribed to patients who have panic attacks. The patients could be instructed to take them as needed, but they should not take them for longer than a few weeks. When the medications are taken for too long, the body can become tolerant to them, resulting in addiction.

Dependence is defined by World Health Organization as a strong desire or sense of compulsion to take a substance, a difficulty in controlling its use, the presence of a physiological withdrawal state, tolerance of the use of the drug, neglect of alternative pleasures and interests and persistent use of the drug, despite harm to oneself and other. Opioid dependence develops after a period of regular use of opioids, with the time required varying according to the quantity, frequency and route of administration, as well as factors of individual vulnerability and the context in which drug use occurs. Opioid dependence is not just a heavy use of opioids, but a complex health condition that has social, psychological and biological determinants and consequences, including changes in the brain. It is not a weakness of character or will. The key elements of opioid dependence are: a strong desire or sense of compulsion to take opioids; difficulties in controlling opioid-taking behavior; a withdrawal state when opioid use has ceased or been reduced; evidence of tolerance, such that increased doses are required to achieve effects originally produced by lower doses; progressive neglect of alternative pleasures or interests; and persistence with opioid use despite clear evidence of overtly harmful consequences. It is also the fact that heroin and opium are illicit and often expensive contributes to the criminal behaviors associated with their use—primarily acquisitive crime and drug trafficking. These aspects make opioid dependence particularly damaging to the individual, family and community. Drug dependence is a medical, not a moral issue. It has nothing to do with being weak or bad. As with other chronic conditions, there is no simple and quick remedy to address this complex illness. Long-term and continued care is often required. Those who manage to quit heroin permanently remain vulnerable and need enormous determination to avoid a relapse. Failure to acknowledge it contributes to further marginalize people with drug dependence problems, jeopardizing their recovery and chances of successful social integration. On the contrary, showing compassion, understanding and being supportive, is of critical importance to help them resume a normal life.

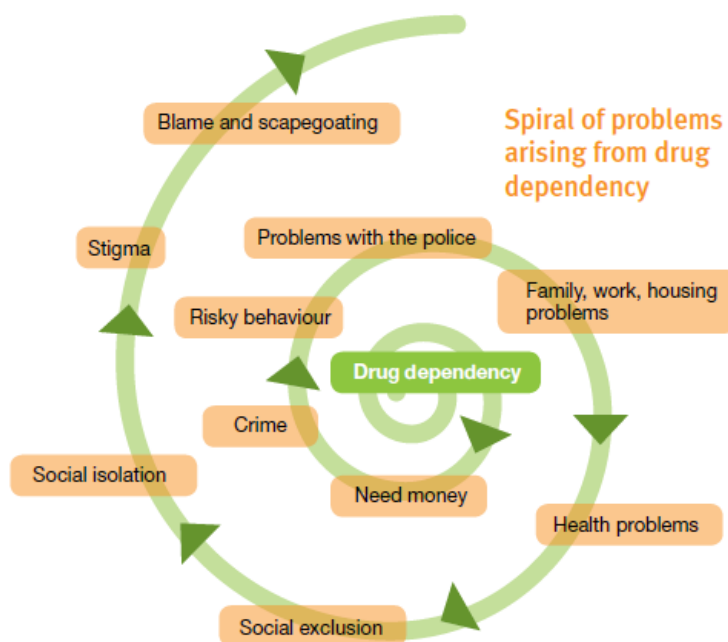
2.2 Drug Use Related Health Problems among People Who Inject Drugs

Drug addiction can cause many long-term negative consequences, including physical health problems like liver damage and heart disease, blood borne infections such as Hepatitis C and HIV, increased risk of bacterial infections as well as mental illnesses like depression and anxiety disorders, psychiatric disorders, overdose, and

suicide. Drug abuse also causes long-term changes to the brain that make quitting so difficult and that take years to change back to normal. Indirect long-term effects of drug addiction include broken relationships, legal problems, financial problems, injuries, and poor overall health. Of the health consequences, viral infections are widely recognized. Risk of transmission of HIV is high amongst people who inject drugs (PWIDs), due to sharing of injection equipment and engagement in unprotected sex. The latter can either be in exchange for drugs, to gain income in order to afford drugs, or while under their effects, which can lead to feelings of sexual arousal and lack of inhibitions. Risky sexual behavior can also increase exposure to sexually transmitted diseases such as chlamydia, gonorrhea and syphilis.

People who inject drugs are among the most marginalized and stigmatized people who use drugs. They are exposed to specific risk behaviors and risky environments and experience a broad spectrum of adverse social and health consequences. Homelessness and incarceration are common, as is engagement in risk behaviors such as casual unprotected sex, using a needle syringe after use by someone else and involvement in sex work. Unsafe injecting practices, including the sharing of contaminated needles and syringes, is a major route for the transmission of both HIV and HCV among People who inject drugs. In addition, those who acquire HIV and HCV through unsafe injecting practices can transmit the diseases to others, for example, through sexual transmission. HCV is more readily spread than HIV through injecting. Studies among healthcare workers in the United States (using hospital data on needle-stick injury) have estimated that the probability of transmission of HCV per exposure to a contaminated syringe is between 5 and 20 times higher than for the transmission of HIV.

Figure (2.1) Spiral of Problems Arising from Drug Dependency



Source: World Drug Report 2018

2.2.1 Drug Use and Viral Infections

Since several years back, a systematic review conducted by Mathers, *et al.* (2008) demonstrated the global problem of drug use and HIV. It is well known that HIV could be transmitted through HIV infected blood between human being. US Centers for Disease Control and Prevention (CDC) reported that, depending on the amount of blood, HIV titer and temperature, HIV could be viable up to 42 days in a used needle. Abdala, Stephens, Griffith, & Heimer (1999) determined HIV-1 virus' survival duration, in the syringes being used by the PWID, using cell culture and virus detection. The researchers recovered viable, proliferating HIV-1 from the syringes stored at room temperature for more than 4 weeks. However, its survival could vary based on the temperature, and some other factors. The finding becomes important scientific basics for development of needle exchange services and appropriate collection and disposal of used syringes, as part of harm reduction programs.

Despite the scientific evidences for generating effective prevention and harm reduction interventions, which were obtained several years back, the decline in extent of HIV among PWID is yet to be satisfactory. Based on the modelled estimates, Joint United Nations Programme on HIV/AIDS (UNAIDS) (2018) reported that there are

1.8 million (1.4 – 2.4 million) new HIV infections occurred in 2017 worldwide. Of those, incidence among PWID was accounted for 9 percent globally. Roughly one in eight people who inject drugs lives with HIV, amounting to 1.4 million people. UNAIDS estimates that injecting drug users are 22 times more likely than the general population to be infected with HIV. Looking at the different regions, the prevalence of HIV among PWID is the highest by far in South-West Asia and in Eastern and South-Eastern Europe, with rates that are 2.3 and 1.8 times the global average, respectively (UNODC, 2019). Prevalence of HIV among people who inject drugs in Asia is among the highest in the world. This clearly indicated the widespread drug use problem and significant gaps in infection prevention services.

Similarly, prevalence of HCV is also high among PWID. HCV transmitted through blood and blood product mainly and also through sexual and unregulated tattooing although infrequent. The burden of disease (mortality and morbidity) among PWID resulting from HCV is greater than from HIV. Hepatitis C virus is more resilient than HIV and it is capable of surviving on drug preparation and injecting equipment for several days to weeks. HCV infection is highly prevalent among PWID, as every second PWID is living with HCV. It also stated that most of the transmission occurred through sharing of needles or equipment for injecting drug use and most at risk population includes PWID. The quantity of blood required is much smaller for HCV transmission than HIV and it is curable though access to antiviral is very limited still. HCV lead to acute or chronic hepatitis and progression towards cirrhosis and hepatocellular carcinoma – liver cancer. It is estimated that 71 million people are HCV infected and of those, approximately 399,000 died annually (WHO, 2018b) worldwide.

The joint UNODC/WHO/UNAIDS/World Bank global estimate for 2016 for the prevalence of HBV among PWID is 7.5 per cent; in other words, an estimated 0.8 million PWID are living with HBV. People who use drugs in Asia have some of the highest rates of viral hepatitis globally.

2.2.2 Non-viral Injection-related Injuries and Diseases

Unsafe injecting drug use practice could also lead to non-viral injection related injuries and diseases (IRID) which includes severe local and systematic bacterial infections and other cardiovascular malfunctions, which could as well lead into high mortality and significant morbidities. Larney, Peacock, Mathers & Degenhardt

(2017), conducted a systematic review, exploring 33 different studies focusing on injection-related injuries and diseases (IRID) among PWID. They reported widely varied lifetime prevalence of abscess/ cellulitis bacterial infections at injection site, from 6 to 69 percent, and risk factors as more frequent, intramuscular and subcutaneous injections, use of un-sterile injection equipment as well as failure to clean the injection site. They also reported 0.5–12 percent lifetime prevalence of infective endocarditis, 2–10 percent of sepsis, 0.5–2 percent of bone and joint infections and 3–27 percent of thrombosis and emboli. Some PWID uses non-sterile equipment to get drug into their blood to attain high feeling with low doses of drugs (Heroin). Because of stigmatization, discrimination and inappropriate law, they cannot easily access to health services. The local infection can extend and complicated to systematic infections especially in those marginalized people.

2.2.3 Overdose

The next drug related harm is overdose and it is the one of the leading cause of premature death among drug users. Opioid overdoses happen when there are so many opioids or a combination of opioids and other drugs in the body that the victim is not responsive to stimulation and/or breathing is inadequate. This happens because opioids fit into specific receptors that also affect the drive to breathe. If someone cannot breathe or is not breathing enough, the oxygen levels in the blood decrease and the lips and fingers turn blue- this is called cyanosis. As oxygen saturation (normally greater than 97 per cent) falls below 86 per cent, the brain struggles to function. This oxygen starvation eventually stops other vital organs like the heart, then the brain. This leads to unconsciousness, coma, and then death. Within 3-5 minutes without oxygen, brain damage starts to occur, soon followed by death. **With opioid overdoses, surviving or dying wholly depends on breathing and oxygen.** Fortunately, this process is rarely instantaneous; people slowly stop breathing which usually happens minutes to hours after the drug was used. This period is sometimes associated with loud snoring, leading to the term “un-arouse snorers”. An overdose may result in a toxic state or death, but it can be reversed if antidote, named Naloxone, is administered timely at Drop-In-Centers or Hospitals.

2.3 State of Social Well-being among People Who Inject Drugs

Methadone maintenance therapy is as well proven a very effective measure for improving the drug users' quality of life in order to reduce heroin use and practice of injection. Quality of life is defined by the World Health Organization (2018b) as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns". It is a broad as well as complex concept and there are four domains, which affect the quality of life. These include the physical health, psychological status of the individual, social relationships with others and the environment surrounding the individuals. Moreover, in the constitution of WHO, social well-being is stated as an integral part of the term "health" together with physical and mental well-being (WHO, 2014). It highlighted that attaining highest possible health, which includes social well-being, as a fundamental right regardless of any social, economic, political situation or cultural beliefs. The social well-being is dependent on interpersonal relationships, respect for others and their values, empathy and compassion within the community, society or in a group. Aked, Marks, Cordon & Thompson (2008) reported five important actions to be taken in one's everyday life to attain and enhance the personal well-being, which includes connecting with people around you, being active physically, being curious and aware of the world around you

u, keeping on learning on the matters of interest and give or do something like smiling for or thanking someone, volunteering. The report suggested that in the longer term, improving individual well-being could reduce the mental health problems within the community.

Among several goals set for intervention with methadone treatment, a critical one for the society is to help drug users in normalizing their daily life and integrating them back within the families and their society (DDTRU, 2017). Fei, Yee, Habil, & Danaee (2016) highlighted significant improvement in physical health, psychological status and social relation, which positively support social well-being of heroin users after receiving regular methadone treatment. Paquette, Syvertsen and Pollini (2018) illustrated the stigma imposed by the public on the methadone treatment, defining it as another illicit drug use, hindering access to and retention of drug users on the evidence based intervention. That interfered with drug users' interest on re-attaining healthy status and exclude methadone clients from support services for recovery.

Poverty, unemployment, homelessness, mental disorder and social exclusion were influencing negatively on potential impact of the interventions. BlueCross BlueShield Association (2016) also proved the fall in unemployment as the health score rises in the United States. It presented the significant and positive relation between the better health score and the healthy workforce, better annual income and better economics. Social related factors like network and attachment, the extent of social resources and perceived support are also significantly associating with satisfaction of life and individual's happiness (Huang, *et al*, 2018). Healthy individuals would feel themselves as part of the society (Keyes, 1998), hence it is important to evaluate social integration/inclusion to reflect individuals' feelings on how much they constitute and belong to their social together within their social network and community. In summary, social well-being could be assessed to understand the quality of social relationship between the drug user and its family.

2.4 Harm Reduction Programs

“Harm Reduction refers to policies, programs and practices that aim primarily to reduce the adverse health, social and economic consequences of the use of legal and illegal psychoactive drugs without necessarily reducing drug consumption. Harm reduction benefits people who use drugs, their families and the community” (Harm Reduction International). The concept of harm reduction was reinvented in the early 1980s at the beginning of the HIV epidemic when healthcare workers started to provide clean syringes to people who inject drugs rather than solely trying to achieve abstinence. Harm reduction is grounded in the recognition that not all persons who use drugs are able or willing to stop using drugs. It is essentially a prevention method by the authority, government, departments, agencies and non-governmental organization to stop the progression of drug use, restore peoples' health, and helps them find alternate ways of thinking and living sober and stable life again.

In essence, harm reduction refers to policies and programs that aim to reduce the harms associated with the use of drugs. A defining feature is their focus on the prevention of drug-related harm rather than the prevention of drug use. One widely cited conception of harm reduction distinguishes harm at different levels – individual, community and societal- and of different types –health, social and economics. These distinctions give a good indication of the breadth of focus and concern within harm reduction (Ritter, A., 2006).

There are nine interventions within the Comprehensive Package. Each intervention is strongly supported by scientific evidence that shows its efficacy of not only preventing HIV among PWID but also reducing a range of adverse health consequences associated with drug use. In addition, it reduces the risk of overdose and other drug-related fatality and decreases the negative effects of drug use may have on individuals and communities. Comprehensive package for people who inject drugs – nine interventions are 1. Needle–syringe programs, 2. Drug dependence treatment, including opioid substitution therapy, 3. HIV testing and counselling, 4. Antiretroviral therapy, 5. Prevention and treatment of sexually transmitted infections (STIs), 6. Condom programs for people who inject drugs and their sexual partners, 7. Targeted information, education and communication for people who inject drugs and their sexual partners, 8. Diagnosis, treatment and vaccination for viral hepatitis and 9. Prevention, diagnosis and treatment of tuberculosis.

2.5 Methadone Maintenance Therapy (MMT)

Treatment plans for opioid dependence or addiction include provision of medication for long-term maintenance. Methadone refers to the drug as a “synthetic, narcotic analgesic,” or pain reliever. Methadone and buprenorphine are the opioid agonists, the drugs that produce similar effects as heroin, which are proved to reduce drug use among PWID and reduction of mortality due to opioid dependence by approximately two-third (UNODC, 2017). Methadone is also safe and efficacious to use as second-line opioid for pain management in patients with advanced cancer. Methadone is available in oral forms for prescription use. The drug takes the form of liquid that a person can ingest to experience relief from chronic pain. Gustav Ehrhart and Max Bockmühl developed methadone in Germany around 1937 to 1939. Methadone is included in the World Health Organization's List of Essential Medicines, the most effective and safe medicines needed in a health system. This highlights its importance as a treatment for heroin dependence.

On the surface, methadone mimics the substance it was made to replace: morphine. But unlike morphine, methadone's effects are more gradual and mild overall. The drug absorbs into the body slowly, offering pain relief while preventing the euphoric high characteristic of morphine. Methadone is a long acting opioid agonist with a half –life of about 24 to 36 hours. Patients who are on methadone maintenance treatment must visit a clinic daily to get their dose of methadone. It is

safer for the patient to take methadone under medical supervision than it is to take heroin of unknown purity. Methadone has become established in many parts of the world as an effective treatment for opioid dependence. According to Global State of Harm Reduction 2018 report, 86 countries were implementing opioid substitution therapy in 2018.

2.5.1 Aim of Methadone Maintenance Therapy

Methadone maintenance therapy is provided with the primary aim to prevent use of illicit opioids. Moreover, it also intended for abstinence through alleviation of opioid withdrawal symptoms and reduction of drug craving, improve health and risk of complications, relapse of drug use, social well-being and functioning of the individuals (UNODC, 2017). In addition, other goals of MMT includes prevention of injection related infections including HIV, HCV, non-viral IRID and supporting reintegration of PWID in their families and society (DOH, 2019). MMT also promote access to other harm reduction and HIV prevention as well as adherence to treatment services (Henderson, 2014). By reducing injecting related health problems, it could save associated health care cost which usually is high with hospital admissions. Even after five decades, opioid substitution therapy using methadone is far most promising method for drug dependence reduction, although the access to treatment still being an issue for improvement globally (WHO, 2014).

2.5.2 Side Effects of Methadone

In terms of organ toxicity, methadone is relatively safe, even for female heroin addicts who are pregnant. Most people beginning methadone experience few side effects. However, there are some side effects of methadone, including: disturbed sleep, nausea and vomiting, constipation, dry mouth, increased perspiration, sexual dysfunction, menstrual irregularities in women and weight gain. The commonest long-lasting effects are constipation, excessive sweating and complaints of decreased libido and sexual dysfunction. Patients develop tolerance to most of these effects after long-term use. Based on several studies, it was concluded that people in the methadone treatment can function normally and do not have problems with their intellectual capacity.

2.5.3 Importance of Adequate Methadone Dosage

Adequate dosage of methadone must be taken by PWID to effectively reduce the drug related harms that is the negative social, medical and criminal consequences of illicit drug using. The methadone process moves through different phases, from start-up induction through stabilization on a maintenance dose. Initial induction phase is aim to relieve withdrawal (abstinence) symptoms, early induction is aim to reach tolerance level, reduce craving, late Induction stabilization phase is aim to establish adequate dose (physical and emotional well-being) and maintenance phase is aim to preserve desired effects (steady-state occupation of opioid receptors). Dose variations may be required throughout treatment in response to changing physiologic conditions and environmental influences affecting the patient.

The first dose of methadone given to a patient is low. The size of the dose is gradually increased until the maintenance dose is reached. The maintenance dose is the amount of methadone the patient requires to prevent opioid withdrawal symptoms, but does not induce euphoria. The first dose given to a patient who has not recently used opioids should be no greater than 10-20mg. When determining the size of the first dose, keep in mind that deaths from methadone overdose in the first two weeks of treatment have occurred at doses as low as 40-60mg per day. Observe the patient 3-4 hours after the first dose has been taken. If the patient is showing signs of overdose, continue to monitor the patient at fifteen-minute intervals. If the patient enters a coma, administer naloxone as a prolonged infusion. Provide the same dose daily for three days. The patient will experience increasing effects from the same dose over this time. After the first three days, assess the patient's withdrawal symptoms. If the patient is experiencing withdrawal, increase the dose by 5-10mg every three days. Dose increases should not be greater than 20mg per week. Monitor the patient for signs of withdrawal and intoxication and adjust the methadone dose accordingly to find the patient's maintenance dose. This process may take several weeks. The maintenance dose will usually be between 60-120mg, but may be higher or lower, depending on the patient's history of opioid use.

The cumulative effect of regular use of methadone is one reason that methadone users are less likely to develop tolerance to its mood-elevating effect. Because of this property, many users can continue to administer methadone only once a day at the same dose for a very long period. Nevertheless, some studies found that some patients, particularly after having a stable dose for at least 1 month, develop

rapid metabolism that reduces the duration of effect. This situation may lead them to have methadone doses more than once a day, known as a split dose. In this circumstance, other pharmacotherapies with longer duration of action should be considered.

2.5.4 Benefits of Methadone Maintenance Therapy

Methadone maintenance therapy also promote access to other harm reduction and HIV prevention as well as adherence to treatment services (Henderson, 2014). By reducing injecting related health problems, it could save associated health care cost which usually is high with hospital admissions. Even after five decades, opioid substitution therapy using methadone is far most promising method for drug dependence reduction, although the access to treatment still being an issue for improvement globally (WHO, 2014).

Extensive research into methadone maintenance treatment has yielded consistent evidence that it is effective in reducing illicit opiate use, mortality rates by up to four times, HIV risk behaviors, transmission of Hepatitis B and C and drug and property-related criminal behaviors. It has also been found to improve access and adherence to ART, reduce instances of overdosing and more generally, improve the physical and mental health of people who inject drugs. People are heroin dependent often spend most of their time trying to obtain and use heroin. This can involve criminal activity such as stealing. Patients in methadone do not need to do this. Instead, they can undertake productive activities such as education, employment and parenting. It also helps retain patients in treatment and is cost-effective. In addition to reductions in risky behavior, methadone recipients also report feeling healthier and having a more productive life style. The daily dose of methadone allows patients to have regular contact with the counselor, an occasion that can mediate necessary actions for overcoming any emerging problems. Methadone can help people who are dependent on heroin to have more stable relationships, get on better with their families, have more stable employment, and get on better with their studies. This means that while on a methadone program people can have a chance to get things like debt, housing, work and relationships sorted out.

2.6 Reviews on Previous Studies

Soe Khaing Linn (2018) who was MPA student studied “A Study of Drug Related Harms between Methadone Clients and Non-Methadone Clients at Mandalay”. The objective of the study is to find the differences of drug related harms between methadone clients and non-methadone clients by comparing the knowledge level of HIV infections, risky behaviors of drug abusing and the drug related harms. Sample contained 100 methadone clients and 100 non-methadone clients. The study found that there was difference of knowledge level about HIV and blood borne virus infection between two groups and the methadone client groups had the higher level of knowledge than non-methadone clients did. The risky practices of needles and syringe sharing and reusing of needles more than one time is less in methadone clients than non-methadone clients. The drug related harms were related with the acquired knowledge level and risky practices among methadone and non-methadone clients. Even there is drug related harms among methadone clients, MMT reduces the drug related harms by reducing the risky behaviors such as needles and syringe sharing and reusing, decreasing the frequency of drug abusing and expense on illicit drugs and PWID enrolled in MMT have greater knowledge about harms.

Chou et al. (2013) analyzed the “Improvement of quality of life in methadone treatment patients” in northern Taiwan. This study examined long-term improvement of quality of life amongst heroin users enrolled in methadone maintenance treatment (MMT). The sample contained 553 heroin dependent individuals from 4 hospitals in northern Taiwan who enrolled in MMT for an average of 184 days. Quality of life was measured using the WHOQOL-BREF questionnaire, 26 items of which were scored by the participants. The WHOQOL-BREF consists of four domains: physical, psychological, social, and environmental. 285 and 155 participants completed 6-month and 12-month follow-ups respectively. After controlling for demographic and clinical characteristics, there were statistically significant improvements in the psychological and environmental domains between baseline and 6 months. Significant improvements were found in psychological and social domains between baseline and 12 months. Patients who stayed in the program for 6 months ($n = 285$) showed statistically significant improvement in their quality of life in the psychological and environmental domains. Similar positive effects were found in patients who stayed in the program for 12 months ($n = 155$), indicating that these patients showed significant improvement in their psychological health and social relationships. Higher methadone

dose and longer duration of treatment were associated with better quality of life in MMT patients. Higher methadone dose may reduce the severity of craving, relapse, and retain in MMT longer. It is concluded that methadone maintenance treatment improves heroin user's long-term quality of life in the psychological and social relationship domains.

Metzger, D. S., *et al.* (1993) analyzed "prevalence and incidence of human immunodeficiency virus (HIV) infection and related risk behaviors among opiate-abusing intravenous drug users (PWIDs) either in or out of methadone treatment". The same contains 152 in-treatment and 103 out-of-treatment intravenous opiate users, were followed prospectively for 18 months. At baseline, the HIV seroprevalence rate for the total sample was 12%: 10% for the methadone-maintained group and 16% for the out-of-treatment group. Out-of-treatment subjects were injecting drugs, sharing needles, visiting shooting galleries, and practicing unsafe sex at significantly higher rates than in-treatment subjects. Follow-up of HIV-negative subjects over the next 18 months showed conversion rates of 3.5% for those who remained in methadone maintenance versus 22% for those who remained out of treatment. The six-fold difference in rate of seroconversion between the two groups suggests that although rapid transmission of HIV still occurs, opiate-abusing PWIDs who enter methadone treatment are significantly less likely to become infected. In contrast, those opiate addicts who do not enter treatment are at significantly higher risk of contracting and spreading the disease.

Sun et al. (2015) studied about "Methadone maintenance treatment programed reduces criminal activity and improves social well-being of drug users in China". Study selection, quality assessment and data extraction were conducted according to the PRISMA (preferred reporting items for systematic reviews and meta-analyses) Statement. Meta-analyses were conducted using Comprehensive Meta-Analysis Biostat software. A total of 30239 participants were included in this study, and about 76.2% were male. It has been shown that the eight pilot MMT clinics have significantly improved social functioning among MMT clients. The rate of drug-related crime also decreased from 9.9% (6.8% to 14.2%) at baseline to 3.4% (2.5% to 4.5%) at 6 months and 3.4% (0.8% to 13.1%) at 12 months. Self-reported criminal behavior of clients also decreased from 20.7% to 3.8% ($p<0.01$). The annual employment rate reportedly increased from 22.9% to 40.6% ($p<0.01$, compared with the baseline survey) and the proportion of clients with a harmonious relationship with

their families increased from 49.6% to 65.8% ($p < 0.01$) after MMT for 12 months. Similar benefits of MMT have also been reported in other countries. For instance, the employment rate for MMT clients in Malaysia increased from 70.1% to 77.6% after 2 years of treatment.

A study of “The Impact of Methadone Maintenance Treatment on HIV Risk Behaviors among High-Risk Injection Drug Users” was undertaken by Karki, Shrestha, Huedo-Medina & Copenhaver 2016. Injection drug users (IDUs) are at high risk of acquiring HIV infection through preventable drug- and sex-related HIV risk behaviors. Methadone maintenance treatment (MMT) is associated with a significant decrease in both drug- and sex-related risk behaviors among this high-risk population. Overall, 16,195 IDUs were enrolled across the study. The findings thus far suggest that MMT is associated with a significant decrease in injecting drug use and sharing of injecting equipment. Evidence on sex-related risk behavior is limited, but suggest that MMT is associated with a lower incidence of multiple sex partners and unprotected sex. The literature also suggests that the most significant factor in reducing HIV risks was treatment adherence.

“Effectiveness evaluation of the pilot program for treatment of opioid dependence with Methadone” study undertaken by FHI 360, Moss and colleagues in May 2014. (FHI, B. (May 2014)). A 24-month prospective cohort study was undertaken. Each member of the cohort of 965 patients in Hai Phong and HCMC was interviewed and completed questionnaires during the baseline assessment and then in follow-up visits at 3, 6, 9, 12, 18, and 24 months. The questionnaire collected information on demographics, location, quality of life (QoL), drug use and sexual behaviors, involvement in criminal activity and physical health status. Blood samples were taken and tested for HIV at the beginning of the study and then after 6, 12, 18 and 24 months of treatment. Urine specimens were also taken and tested for opiates at the end of each visit. Methadone maintenance treatment (MMT) has been associated with reduced rates of illicit drug use, needle sharing and HIV incidence. MMT was associated with a dramatic reduction in percentage of participants using drugs, from 100% of participants using drugs at program enrollment to 34- 36% after 3 months and 19%-26% of participants after 6 months of treatment. This low prevalence of drug use then persisted in both cities till the end of the study. Among patients who reported using drugs, the percentage of patients self-reporting injecting drug use reduced from 87% at baseline to about 50% between month 6 and 12. The rate of needle sharing

also decreased from 2% to 0% for the same period. Condom use increased among study participants, particularly in sex with sex workers. Patients in full-time employment increased from 42% at baseline to 54% of patients after 24 months. These increases were particularly observed among clients who had been on treatment for longer periods.

“Effectiveness of first eight methadone maintenance treatment clinics in China” studied by Lin Pang and his team in 2007 (Pang, L., *et al.*, (2007). Three surveys of clients attending the first phase of eight MMT clinics were carried out at entry, and 6 and 12 months after enrolment. Drug using behaviors, drug related criminal activity, and relationships with families were compared for the three periods. Blood specimen were collected and tested for HIV for each client at entry, and HIV-negative clients were re-tested after 12 months. A total of 585, 609 and 468 clients participated in the first, second and third surveys, respectively. The proportion of clients who injected drugs reduced from 69.1 to 8.9 and 8.8%, and the frequency of injection in the past month had reduced from 90 times per month to twice per month, employment increased from 22.9 to 43.2 and 40.6%, and self-reported criminal behaviors reduced from 20.7 to 3.6 and 3.8% in the three surveys. By the third survey, 65.8% of clients reported a harmonious relationship with families, an increase from 46.8% at entry, and 95.9% of clients were satisfied with MMT services. Eight HIV seroconversions were found among 1153 clients during 12 months. The study demonstrated that the first phase MMT contributed to a reduction in drug use, drug injecting behaviors, drug-related criminal behaviors, HIV infections, and improved relationships within families among heroin users who participated in the MMT program.

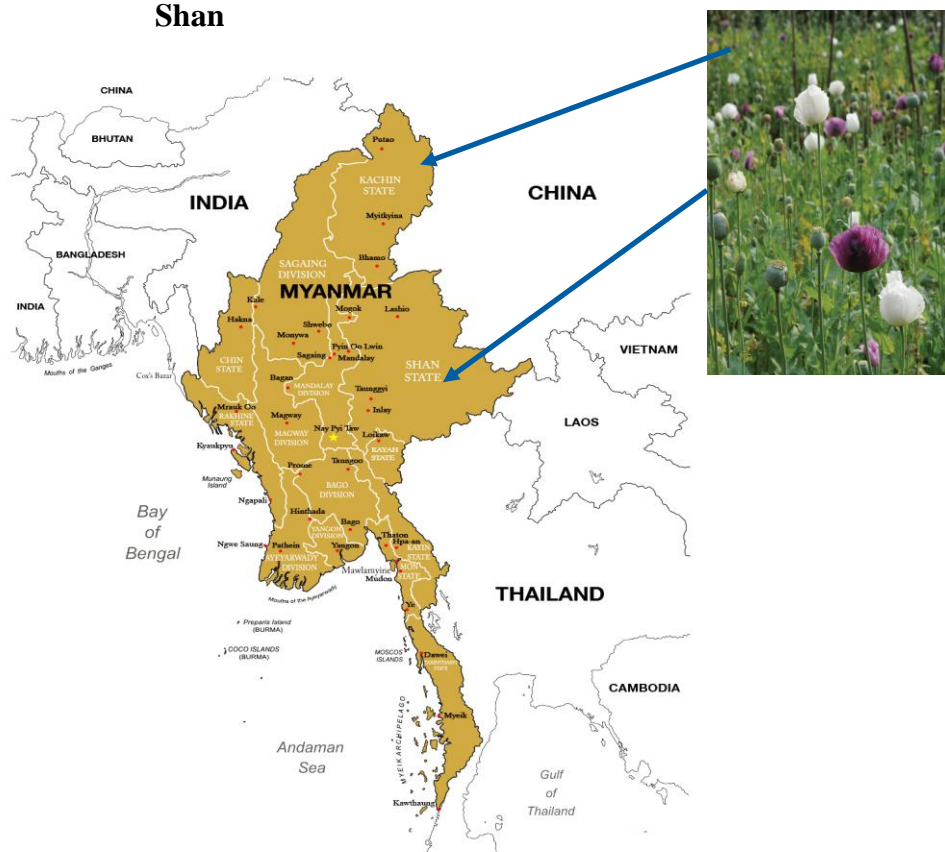
CHAPTER III

DRUG USE SITUATION AND MTHADONE MAINTENANCE TREATMENT IN MYANMAR

3.1 Overview of Drug Use Condition in Myanmar

Myanmar is a large South-East Asian country, where the area bordering Thailand and Laos is known as the ‘golden triangle’ a fertile poppy and, therefore heroin-producing region. Situated within the “Golden Triangle”, Myanmar is the world’s second largest producer of illicit opium after Afghanistan. Poppy cultivation is primarily concentrated in the mountainous areas of Shan and Kachin States, where an estimated 300,000 households are growing opium, mostly because of poverty.

Figure (3.1) Map of the Prevalence of Problematic Drug Use in Kachin and Shan



Source: UNAIDS report 2018

The history of opium used in Myanmar is found since 1519. Opium is used for many purposes as a traditional medicine and home remedial for pain relief, dysentery, fever and malaria. The drug challenges facing Myanmar are significant. They include large areas of opium poppy cultivation and heroin production, increasing methamphetamine production and trafficking, cross-border precursor chemical trafficking, and increasing drug use and associated harms. Myanmar is one of the major opium producers in the world, accounting for 14% of the world's total opium production, and 20 % of the world's total cultivation.

Geographically, Myanmar lies between two major chemical producing countries - China and India - and is situated in the region of East and Southeast Asia where the drug market is pronounced. Currently Myanmar provides easy access and opportunity for drug producers and traffickers based on this strategic geographic location. The volume of drug production occurring in Myanmar requires the importation of large quantities of precursor chemicals and cutting agents, and substantial quantities are trafficked from neighboring countries and continue to be seized.

Table (3.1) Opium Poppy Cultivation in Myanmar 1996 – 2018 (Hectares)

	1995- 96	2008- 09	2009- 10	2010- 11	2011- 12	2012- 13	2013- 14	2014- 15	2016- 17	2017- 18
Cultivated (Hectares)	163,000	31,700	38,100	43,600	51,000	57,800	57,600	55,500	41,000	37,300
Production (Tons)	1760	330	580	610	690	870	670	647	550	510
Destroyed (Hectares)	1,937	4,088	8,274	7,058	23,771	12,258	15,188	13,237	3,533	3,845

Source: ASEAN Drug monitoring report 2017

According to Myanmar Opium Survey 2018, which was conducted jointly by the Central Committee for Drug Abuse Control (CCDAC) of the Ministry of Home Affairs and UNODC since 2002, and satellite survey of poppy cultivated areas is being undertaken since 2006. In Table (3.1), the area under opium poppy cultivation in Myanmar was estimated at 37,300 hectares in 2018. In comparison to 2017, the

area under opium cultivation decreased, continuing the downward trend that started in 2014. The UNODC Survey concluded that due to a sharp increase in the supply of, and demand for, synthetic drugs and particularly methamphetamine across East and Southeast Asia and neighboring regions, the downward trend in opium cultivation and related heroin production in Myanmar needs to be understood in this context.

Official data on the number of drug users in Myanmar is estimates of 300,000 to 400,000 were reported (UNODC). Increased injecting drug use is associated with the transmission of HIV and other blood-borne infections such as hepatitis in diverse segment of population. Southeast Asia is one of the regions with the highest HIV rate among drug users, in particular places in Myanmar: Kachin state and Shan state.

Table (3.2) Population Size Estimation for People who Inject Drugs in Myanmar (2013-2018)

Year	People who inject drugs (PWID) in Myanmar
2013-2014	75,000
2016-2017	83,000
2017-2018	93,000

Source: IBBS data

According to Integrated Biological and Behavioral Surveillance (IBBS) Survey Table (3.2) shows, injecting drug use increased an estimated 75,000 in 2014, 83 000 in 2017 and 93000 in 2018.

3.2 Drug Related Health Problems among People who Inject Drugs in Myanmar

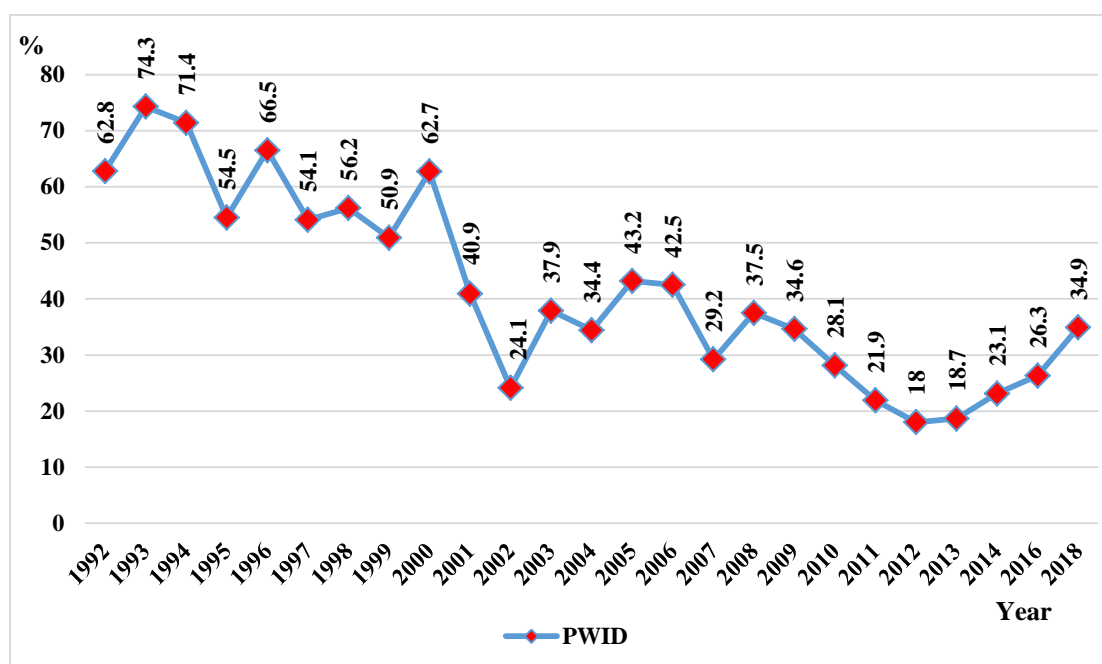
Drug related problem in Myanmar appear to be complex and deeply interconnected with numerous other issues such as conflict, poverty, food in-security, lack of development, limits access to land and weak governance or rule of law and lack of accountability by government. The suffering of individuals and families affected by drug related problems are real and has inspired National authorities to develop the Myanmar drug policy, which is – although not yet in line with the Myanmar Drug Law - pragmatic, effective and grounded in evidence.

Although authoritative agencies confirm that 10% of drug users might develop problematic use and might need (clinical) guidance and support. Problematic drug use or drug dependency (syndrome) is defined by the World Health Organization (WHO/ICD) as a cluster of behavioral, cognitive, and physiological phenomena that may develop after repeated substance use. Typically, these phenomena include a strong desire to take the drug, impaired control over its use, persistent use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and a physical withdrawal reaction when drug use is discontinued. In International Classification of Diseases, Tenth Revision (ICD-10), the diagnosis of dependence syndrome is made if three or more of six specified criteria were experienced within a year. The prevalence of problematic drug use is thought to be high, in particular in Kachin and Northern Shan states where opium is produced. The main health consequences of problematic drug use include high rate of HIV and Hepatitis B and C transmission, as well as lethal overdose, due to unsafe injection practice. Myanmar is one of the country's most severely hit by the HIV epidemic in Asia. The first case of HIV infection was detected in Myanmar in 1988 and the first AIDS case, an injecting drug user, was reported in 1991. Myanmar is now one of 35 countries which together account for 90% of new HIV infections globally. Myanmar had 11,000 new HIV infections reported (approximately 30 infections per day) in 2017. Although this number of new infections remains steady compared to the two years before, observations show that the annual rate of infections is no longer declining at the same rate it did between 2000 and 2010. New infections are mostly found in urban areas or areas where drug use is endemic.

HIV prevalence among people who inject drugs was by far the highest out of all of the key affected populations at 34.9%. In Myanmar the estimated number of people who inject is 93,000 in 2018 as per the IBBS/PSE report (NAP, 2018). According to Myanmar National AIDS Program (NAP, 2018) reports shows 1 in 3 People who Inject Drug (PWID) is living with HIV (48 times higher than the prevalence in the general population). People who inject drugs also presented the highest HIV incidence, accounting for 20–65% of adults, aged 15 to 49, testing positive for new infections. Infection occurs at an early age among those who inject drugs, with 16.8% of those under the age of 25 already testing positive. Figure (3.3) shows HIV prevalence among people who inject drugs in Myanmar and continuing the upward trend among PWID that started in 2012. It also reported that needle

sharing practice significantly high 63% and it clearly indicating as the major mode of HIV transmission among PWID in Myanmar.

Figure (3.2) HIV Prevalence among People who Inject Drugs in Myanmar (1992-2018)



Source: Myanmar National AIDS Programme (2018)

The Myanmar National AIDS Program (NAP) under the Ministry of Health and Sports is the key body responding HIV epidemic in Myanmar with guiding principles of National Strategic Plan on HIV and AIDS (2016-2020). The reach and effectiveness of services especially among the most at risk population including people who inject drugs still has many challenges such as drug user population is spread over a large geographical area with diverse ethnicity, conflict and civil war. Many people who inject drugs live in remote and/or border areas and conflict zones which are hard to reach and where health services are not always available. In some areas, almost every household is affected by the drug problem, which exacerbates poverty and jeopardizes social and economic development. At the same time, drug dependency is rarely appreciated as a health issue, and drug users in Myanmar face stigma, social exclusion and limited access to services. The stigma attached to drug users also rubs off on their families as they may experience shame, rejection and social condemnation. This negative portrayal adds to the stigma and discrimination against drug users, discouraging them from accessing essential health services, including HIV prevention and treatment services.

Table (3.3) Health Consequences of Problematic Drug Use among People who Inject Drugs (2013-2018)

Year	People who inject drugs	HIV prevalence among people who inject drugs (%)	Hepatitis C (anti-HCV) prevalence among people who inject drugs (%)	Hepatitis B (anti-HBsAg) prevalence among people who inject drugs (%)
2013 - 2014	75,000	18.7	79.2	9.1
2016 - 2017	83,000	26.3	79.2	9.1
2017 - 2018	93,000	34.9	87.9	7.7

Source: National AIDS Programme, and World Health Organization (2018)

Table (3.3) shows health consequences of problematic drug use among PWID (2013-2018). HCV is endemic in Myanmar, the prevalence of HCV mono infection among general population is 2.65% and co-infection HIV/HCV 20.1%. The Myanmar Simplified Treatment Guidelines for Hepatitis C Infection (2017) reports that in a 2007 study, the prevalence of reactive or positive antibody HCV among people who inject drugs in Myanmar ranged from 66% to 93%. Corresponding with more recent (2019) AHRN HCV RNA testing (GeneXpert, Cepheid) findings, which confirmed exceptionally high 87.9% HCV positivity rate (362/412) among MMT/ART patients and in line with the PWID IBBS 2017-18, which showed that HCV prevalence was 2 to 3 times higher than HIV and ranged up to 84.5% in Waimaw. The prevalence of reactive HBV among people who inject drugs in Myanmar is 7.7% and it is decreased compared to previous year.

3.3 Harm Reduction in Myanmar

The Republic of the Union of Myanmar suffered from the problem of the narcotic drug as same as the countries on the world for a long period of years. The strict criminalization of drug use and the health consequences of drug use corrode public health, socio-economic development, justice, peace and tranquility and has

been threatening the human security at large. Solving of the drug-problem as social phenomena cannot be tackled by a single approach and needs a balance integrated multi-dimensional supply, demand and harm reduction approach. The 1961 UN Single Convention on Narcotic Drugs states that its ultimate objective is “to improve the health and welfare of mankind.” Although recent drug policy reform emphasizes the imperative to protect health, Myanmar has prioritized drug demand and supply reduction strategies based on repression for decades, while little effort has been made, and limited domestic resources allocated, to establish evidence-based health and social interventions, hence devastating HIV and Hepatitis C epidemics continue to rage among drug users.

In response to the situation, harm reduction programs were implemented in areas where drug use was prevalent like Kachin and Shan States, and Mandalay, Sagaing and Yangon divisions. Myanmar started harm reduction activities since 2003 with the collaboration of Ministry of Home Affair and Ministry of Health and Sport. Harm reduction services for PWIDs include needle and syringe program (NSP), methadone maintenance therapy (MMT), Condom distribution, peer education for behavior change through outreach and drop in center (DICs), HIV counseling and testing (HCT), access to ART and other treatment and health services, Hepatitis B testing and vaccination, hepatitis C testing, Overdose prevention. However, there are still gaps in access to harm reduction services especially to Methadone Maintenance Therapy because of high discrimination and possible arrest make drug users difficult to access official healthcare. Due to the use of heroin as a main drug for injecting drug use in Myanmar, Drug Dependency Treatment & Research Unit (DDTRU) also started piloting of methadone replacement therapy as an opioid substitution therapy with the support of WHO at four sites (Yangon, Mandalay, Lashio and Myitkyina) in 2006.

3.3.1 Methadone Maintenance Therapy (MMT)

The goal of methadone treatment is the achievement and maintenance of physical, psychological and social wellbeing through reducing the risk-taking associated with drug use through reduction in drug use, or through complete abstinence from drug use. Holistic approach should be provided to drug users not only their health but also family support, psychological support and income generation employment opportunities for their live.

Table (3.4) Number of Methadone Dispensing Sites in Myanmar (2006-2018)

Year	2006	2010	2011	2012	2013	2014	2015	2016	2017	2018
Methadone dispensing sites in Myanmar	5	11	13	17	26	36	41	46	51	55

Source: Drug Dependency Treatment & Research Unit Annual Report 2017

Table (3.4) shows number of methadone dispensing sites in Myanmar (2006-2018). The Myanmar MMT program started in 2006 with technical assistant by WHO and expanded its activities gradually. In 2017, MMT dispensing sites were increased up 51 sites. In 2018, 55 methadone clinics and 15,994 people are taking MMT.

The Myanmar methadone program is structured through careful initiation processes and dose increases with supervised dosing to minimize the risks involved and maximize the benefits through long-term treatment, counselling and support. It is for these reasons that the Myanmar methadone program's motto is "Start Low, Go Slow, Aim High" meaning a progressive carefully monitored beginning and progress in deification aiming to reach effective therapeutic levels of methadone expected to be between the range of 60 to 120 mg per day for most of the patients.

In Myanmar, the methadone program is initially to be delivered by drug treatment specialists and hospital dispensaries. Specialist methadone services at Drug Treatment Centers provide support for the assessment and management of complicated cases. Training is expected to be provided in the future for community practitioners who wish to become involved in the program.

**Table (3.5) People on Methadone Maintenance Treatment in Myanmar
(2006-2018)**

Calendar Years	People on MMT
2006	260
2007	392
2008	512
2009	771
2010	1121
2011	1673
2012	2909
2013	4397
2014	7872
2015	10290
2016	12474
2017	13441
2018	15994

Source: Myanmar MMT programme

Table (3.5) shows how Ministry of Health has been expanding Methadone Maintenance Therapy with the collaboration of partner organizations since 2006 to until now. National Methadone Programed started with 5 clinics in 2006 and set up 55 clinics in 2018. Moreover, National Methadone program initiated with 260 clients in 2006 and reached 15994 clients in 2018.

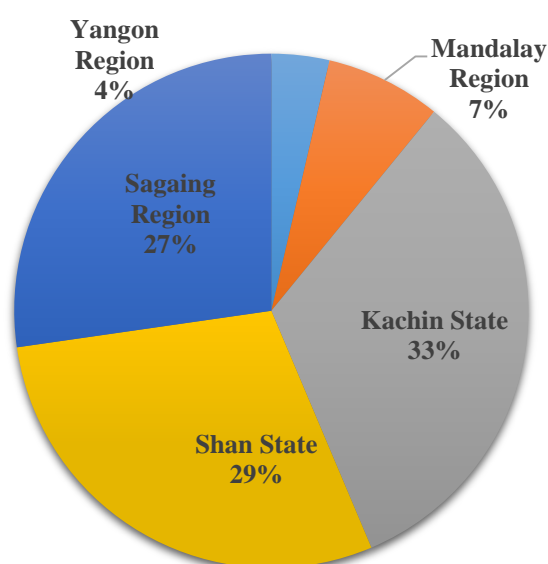
Table (3.6) Methadone Coverage Subnational 2018

State/ Region	Number of Methadone Clinic	Number of New Methadone Client	Number of Current Methadone Clients in 2018	MMT Coverage
Yangon Region	2	145	598	21%
Mandalay Region	4	422	2194	22%
Kachin State	18	3129	7235	33%
Shan State	16	919	2144	7%
Sagaing Region	15	1757	3823	20%

Source: Myanmar MMT programme

Table (3.6) shows methadone maintenance treatment coverage subnational data in 2018. Among 55 methadone dispensing centers in Myanmar, 2 centers in Yangon Region with 598 current methadone clients, 4 centers in Mandalay Region with 2194 current methadone clients, 18 clinics in Kachin State with 7235 current methadone clients, 16 centers in Shan State with 2144 current methadone clients and 15 centers in Sagaing Region with 3823 current methadone clients.

Figure (3.3) Methadone Coverage Subnational in Myanmar 2018



Source: Myanmar MMT programme

Figure (3.3) shows methadone coverage subnational in Myanmar 2018. In Yangon Region, methadone coverage is 21%, Mandalay Region 22%, Kachin State 33%, Shan State 7% and Sagaing Region methadone coverage in 2018 is 20%. Methadone maintenance treatment (MMT) leads to the reduction or cessation of opioid use and decreases the risk of opioid overdose by almost 90%. Methadone maintenance therapy was crucial for PWIDs to reduce risks of transmitting HIV and other blood-borne infections as well as social consequences. Methadone dispensing sites were increased gradually. In 2014, components of comprehensive package for PWIDs were integrated into MMT program to be able to contribute more to national response to HIV problem. For people who use drugs living with HIV, MMT significantly improves HIV treatment outcomes. Methadone enables people who use drugs to resume a normal life, be productive and get back to work.

3.4 Overview of Drug Use Conditions among People who Inject Drugs in Hpakant

Hpakant township of Kachin state, a well-known jade and gold mining area where there is drug use, sex work, civil conflict and migrant workers from all part of Myanmar. Hpakant, located on the Uyu River, 350 km north of Mandalay, in the middle of one of the world's most inhospitable and malaria infested jungles, crowded with drugs, gambling, sex-work and opium dens. This state is also well known for its important natural resources (e.g. jade, gold, amber, timber, etc.) which causes significant internal migration. A local armed conflict between the central Myanmar Army, and local armed groups is on-going in this region. Kachin State is one of the areas most affected by problematic drug use in the country, with a large number of PWUD living in remote, rural areas. It also hosts one of the most significant populations of people who inject drugs (PWID) in the country.

3.4.1 Drug use in Hpakant

Official figures on heroin use in Hpakant are hard to get. According to national strategic plan 2017, an estimated drug user in Hpakant is 3793. An estimated 300,000 migrant laborers from all over Myanmar come to Hpakant, chasing their dream of getting rich by finding a big jade stone. It is reported that many migrant workers use drugs, and occupational accidents and natural disaster at the poorly regulated mines cause of high rates morbidity and mortality. Drug use permeates every level of the mining industry in Hpakant, according to information from jade mine workers, drugs are a way of life in there and there is anecdotal evidence that also companies are involved in drugs in one way or another. Opium dens, where clients come to smoke opium of methamphetamines are scattered throughout the mining communities, although heroin sales are usually carried out in “camps” a short walk away from the settlements. Typical “drug camps” are clusters of makeshift bamboo huts or plastic tents where heroin is sold for injection or inhalation. Heroin is cheap and widely available ad costs as little as 1,000 kyats for one dose.

3.4.2 Drug Related Harms to Health in Hpakant

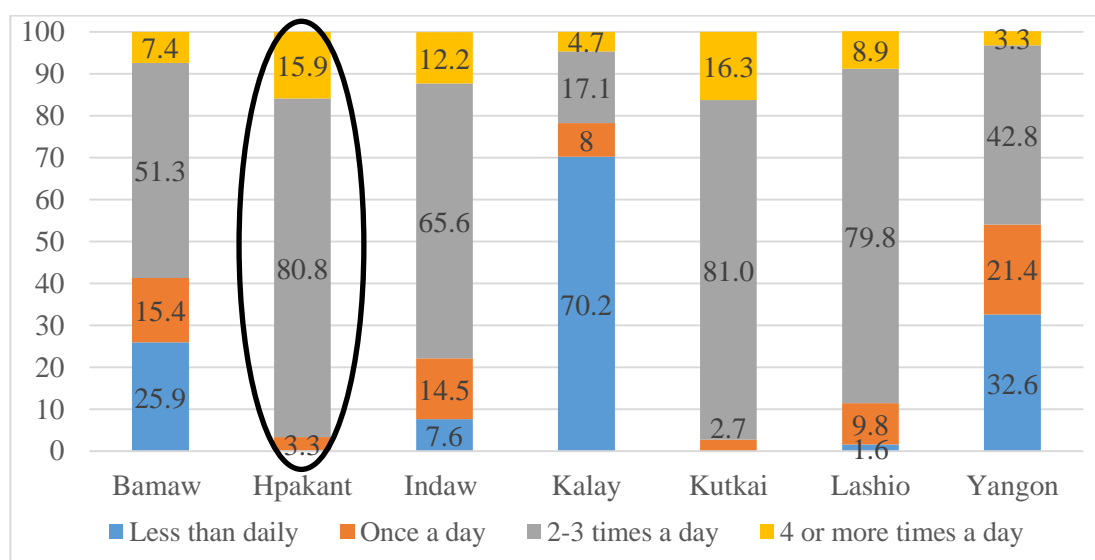
Drug use is so intrinsic to jade mining that "shooting galleries" operate openly in Hpakant, with workers often exchanging lumps of jade for hits of heroin.

Table (3.7) Injecting Frequency among People who Inject Drugs per Day (2017)

Injecting Frequency among PWID per day	Bamaw	Hpakant	Indaw	Kalay	Kutkai	Lashio	Yangon
Less than daily	25.9	0.0	7.6	70.2	0.0	1.6	32.6
Once a day	15.4	3.3	14.5	8	2.7	9.8	21.4
2-3 times a day	51.3	80.8	65.6	17.1	81.0	79.8	42.8
4 or more times a day	7.4	15.9	12.2	4.7	16.3	8.9	3.3

Source: IBBS 2017

Figure (3.4) Injecting Frequency among People who Inject Drugs per Day (2017)



Source: IBBS 2017

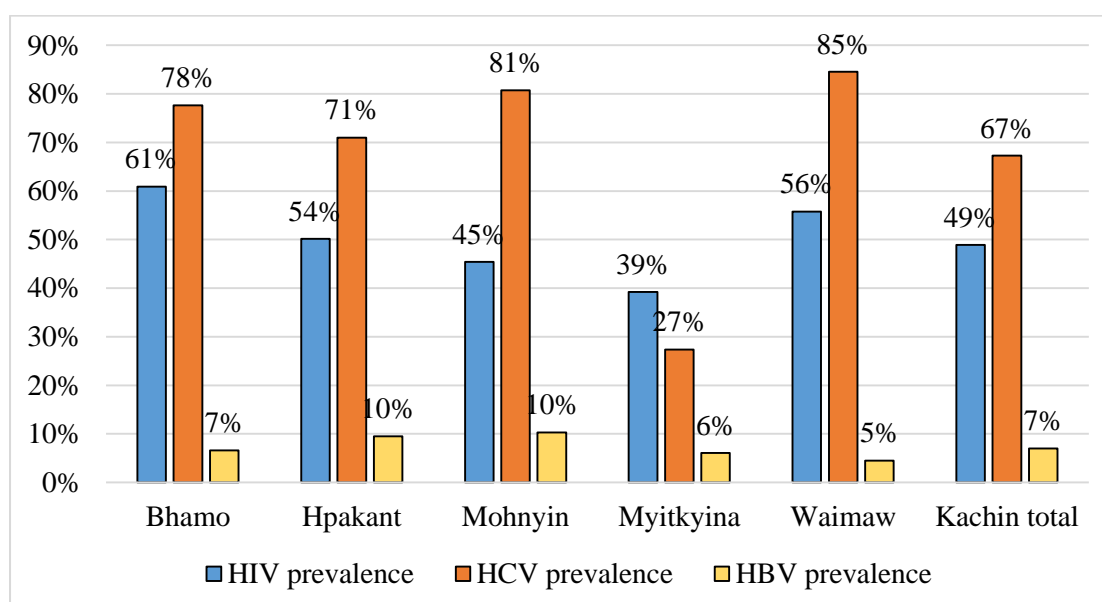
Table (3.7) shows injecting frequency among PWID per day in 2017. According to IBBS survey 2017, injecting frequency in the last month among PWIDs from Hpakant is more than 80% injected 2-3 times a day or more. Risk of HIV infection is also strongly related to frequency of injection.

Table (3.8) HIV, HCV and HBV Prevalence among People who Inject Drugs in Kachin (2017)

Townships	HIV prevalence	HCV prevalence	HBV prevalence
Bhamo	61%	78%	7%
Hpakant	50%	71%	10%
Mohnyin	45%	81%	10%
Myitkyina	39%	27%	6%
Waimaw	56%	85%	5%
Kachin total	49%	67%	7%

Source: IBBS 2017

Figure (3.5) HIV, HCV and HBV Prevalence among People who Inject Drugs in Kachin (2017)



Source: IBBS 2017

Table (3.8) shows prevalence of HIV, HCV and HBV among PWID in Kachin. The prevalence of HIV among PWID in Hpakant is 54 per cent, the prevalence of HCV among PWID in Hpakant is 71 per cent and the prevalence of HBV among PWID in Hpakant is 10 per cent (IBBS 2017). In addition, the region is reported to have a greater proportion of young injectors (under 25 of age) who have started to use drugs in their early 20's (Swe et al, 2010). High-risk behavior, low access to health care and prevention services, lack of trained human resources, strong

stigmatization and a repressive drug policy environment are sparking the HIV epidemic amongst PWID. In addition, despite the lack of official sources, fatal overdoses are claimed to be a major health challenge among PWID.

3.4.3 Methadone Maintenance Therapy in Hpakant

Hpakant, Lone Khin and Seikmu part of Myanmar's Hpakant township, has long been notorious for high rates of drug use and HIV infection. Living conditions in this remote, mountainous area are extremely tough. The overall aims of Methadone Maintenance Therapy are to reduce or eliminate illicit heroin and other drug use by those in treatment, improve the health and well-being of those in treatment, facilitate the social rehabilitation of those in treatment, reduce the spread of blood borne diseases (HIV) associated with injecting opioid use, reduce the risk of death associated with opioid use and reduce level of involvement in crime associated with opioid use.

Methadone maintenance therapy started in Hpakant township hospital with AHRN since August 2012. Also at Lonekhin township hospital since May 2014 and Seikmu Rural health center collaboration with AHRN since April 2013.

Table (3.9) Active Methadone Clients in Hpakant, Lone Khin and Seikmu (2015 to 2018)

Township	2015			2016			2017			2018		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Hpakant	383	18	401	440	18	458	491	20	511	521	19	540
Lone Khin	534	9	543	629	7	636	676	10	686	670	13	683
Seikmu	494	24	518	603	36	639	618	37	655	718	35	753
	Active MMT clients in 2015		1462	Active MMT clients in 2016		1733	Active MMT clients in 2017		1852	Active MMT clients in 2018		1976

Source: Hpakant Methadone Center

Table (3.9) shows active methadone clients in Hpakant, Lone Khin and Seikmu (2015 to 2018). Active methadone clients in Hpakant, Lone Khin and Seikmu 2015 is 1462 clients, 1733 clients in 2016, 1852 in 2017 and 1976 clients in 2018.

Under the supervision of Consultant psychiatrist, medical doctor from AHRN consults with the client for methadone dose adjustment, health and psycho-social problems. In methadone clinic, client should consult with doctor once a 3 day to adjust the dose there. It is called as induction phase and will take 2 weeks to 1 month. After induction phase, most of the clients have reached the adequate dose individually. Maintenance phase will be followed by induction phase and the clients should take the adequate dose daily. Client needs to see doctor if client has any complaints or discomfort.

According to national strategic plan 2017, an estimated drug user in Hpakant is 3793. There is still half of the clients are not taking methadone yet. Moreover, due to many reasons, most of the methadone clients are continuing opiates use. Still, there are also many challenges in MMT centers at Hpakant, such as limited men power, crowded of methadone clients, social problems of methadone clients, not regular follow up, misconception of methadone, stigma and discrimination of communities, easily accessible of heroin, improper of law enforcement and armed conflicts among ethnic armed groups. Moreover, adhering to such a long term as well as supervised daily dose regimen would need significant motivation of the clients. This motivation for adhering daily regimen could only come from the positive impacts on the life of people, including good health, acceptable social and the economic circumstances.

CHAPTER IV

SURVEY ANALYSIS

4.1 Survey Profile

The study focused on the People Who Inject Drug (PWID) who lived in Hpakant township of Kachin State. Apart from that, the PWID should be under Methadone Maintenance Therapy (MMT). Hpakant Township, a well-known jade and gold mining area where there is drug use, sex work, civil conflict and migrant workers from all part of Myanmar. Hpakant, located on the Uyu River, 350 km north of Mandalay, in the middle of one of the world's most inhospitable and malaria infested jungles, crowded with drugs, gambling, sex-work and opium dens. This state is also well known for its important natural resources (e.g. jade, gold, amber, timber, etc.) which causes significant internal migration. A local armed conflict between the central Myanmar Army and local armed groups is ongoing in this region. Kachin State is one of the areas most affected by problematic drug use in the country and high HIV, HBV and HCV prevalence. (NAP, 2018b)

The survey was conducted in Drop-In Center, Asian Harm Reduction Network (AHRN), where PWID of both under methadone treatment and under not treatment attended daily to take relax, HIV and HBV prevention services, drug counseling and other treatment at DIC clinic free of charges and also at drug treatment centers where methadone is prescribing in Hpakant township, Kachin State which has a high prevalence of people who inject drugs. The structured questionnaires were used during in depth face to face interview (See Annex). The survey period was from June to July 2019. Data about personal identity were not asked. The recruitment was voluntary with consent of an individual. The data were recorded and computerized with SPSS version 25.

4.2 Survey Design

To achieve objectives, the comparative and quantitative approach was used, which include primary data collection through well-structured questionnaires with two groups such as PWIDs who are under methadone and PWIDs who are not under methadone. The secondary data are obtained from UNODC, WHO, National AIDS Program, Drug Treatment Centers, CCDAC, reports and websites. Primary data collected were analyzed by descriptive methods. The survey questionnaire was organized with 4 sections (i) socio-demographic characteristics of respondents, (ii) perception of social inclusion within their social network (iii) characteristics on drug use and practices (iv) characteristics on illicit drugs and health. (APPENDICES). The counselors from AHRN, the interviewers of this survey, were trained how to interview with structured questionnaires. The three interviewers were supervised by one counseling officer, who was in charge of recruitments.

The required sample size was calculated by the formula of *Taro Yamane, 1967* (Finite population). (Yamane, 1967)

People who inject drug (PWID) without methadone maintenance therapy in Hpakant Township= 3,793 (NSP 2017)

$$\begin{aligned}n &= N / [1 + N \times (e^2)] \\&= (3793) / [1 + (3793 \times 0.1 \times 0.1)] \\&= 3793 / 38.93 \\&= 97.43 \sim 100 \text{ respondents}\end{aligned}$$

People who inject drug (PWID) who are taking methadone maintenance therapy more than 12 months = 1852 (DDTRU, 2017)

$$\begin{aligned}n &= N / [1 + N \times (e^2)] \\&= (1852) / [1 + (1852 \times 0.1 \times 0.1)] \\&= 1852 / 19.52 \\&= 94.87 \sim 100 \text{ respondents}\end{aligned}$$

Where, n = sample size

N = Total finite population

e = Margin of error (MoE)

e = 0.1 based on the research condition.

According to the sample size calculation, the required minimum sample size was (97.43) and (94.87) at (90%) confidence level, (CI) and 10% margin of error. Therefore, 100 respondents from each group are approached to get quality data.

4.3 Survey Analysis

The section below is the presentation and analysis of data from the responses obtained from face to face interview. The collected data set has been statistically analyzed by using SPSS- Statistical Package for Social Science 25. Descriptive method also was used to show result of study. The results were based on the various data obtained from the use of questionnaires.

4.3.1 Socio-demographics Characteristic of Respondents

According to the questionnaires, demographic characteristic of the people who inject drugs on methadone maintenance therapy and non-methadone current drug users include gender, age, race/ethnicity, education level, marital status, housing status, currently living with, employment status, daily income distribution and average saving status among respondents.

Table (4.1) Gender and Age of Respondents

Gender and Age of Respondents		Non-Methadone Clients	Methadone Clients	Total
Gender	Male	97	94	191 (95.5%)
	Female	3	6	9 (4.5%)
Total		100	100	200
Age Group	< 25 yr	12	3	15
	25 yr - 34 yr	50	44	94
	35 yr - 44 yr	26	36	62
	45 yr - 55 yr	11	16	27
	> 55 yr	1	1	2
Total		100	100	200

Source: Survey data

As stated under the Table 4.1, the majority of participants are male for both group groups. The number of 97 respondents are male and the number of 3 respondents are female for non-methadone group. The number of 94 respondents are male and the number of 6 respondents are female for methadone group. Given overall small numbers of female, compared with male. Only 4.5% (9/200) female participants could be interviewed in both the non-methadone and the methadone groups since the drug use epidemic has been largely affecting the male population. It could also be

concluded that minimum number of female were accessing harm reduction services and methadone program.

The majority of age group for both MMT (44%) and Non-MMT (50%) clients is between 25 yr. and 34 yr. The second largest age group for both MMT (36%) and Non-MMT (26%) clients is between 35 yr. and 44 yr. The majority of age

between two groups is between 25 yr. and 44 yr. It was clear that the drug use problem had been affecting youth largely and those from productive age group

Table (4.2) Ethnicity, Education level and Marital Status of Respondents

Ethnicity, Education and Marital Status of Respondents		Non-Methadone Clients	Methadone Clients	Total
Race/Ethnicity	Myanmar	37	41	78 (39%)
	Kachin	20	25	45 (23%)
	Shan	7	3	10 (5%)
	Rakhine	26	22	48 (24%)
	Others	10	9	19 (10%)
Highest education level	Illiterate	3	0	3 (2%)
	Read and write	22	2	24 (12%)
	Primary	45	13	68 (34%)
	Middle	15	53	62 (31%)
	High School	15	21	36 (18%)
	University/ College	0	9	9 (5%)
	Graduate	0	2	2 (1%)
Total		100	100	200
Marital Status	Single	51	25	76
	Married	29	40	69
	Separated	10	9	19
	Divorced	10	21	31
	Widow/ Widower	0	5	5
Total		100	100	200

Source: Survery data

Table (4.2) describes that the highest ethnicity in both the non-methadone and the methadone groups is Myanmar 39% (78/200), followed by Rakhine ethnicity is 24% (48/200). Kachin ethnicity is only 23% (45/200) in both the non-methadone and

the methadone groups. The survey was conducted at Hpakant Kachin State but other ethnicity is higher than Kachin ethnicity.

In terms of education level, highest group is at primary school level, which accounted for 45%, followed by 22 % read and write level for non-methadone clients. There was no responded number of non-methadone clients in university and graduated education level. For methadone clients, highest group is at middle school, which accounted for 53%, followed by 21 % from high school level. Only 2% of graduate respondents for methadone clients.

Regarding with marital status of the samples, the highest number for non-methadone clients is single, which counted 51 clients. The highest number for methadone clients is married, which counted 40 clients.

Table (4.3) Living Status of Respondents

Living status of the Respondents		Non-Methadone	Methadone
Number of different places lived	No	73	86
	One	11	11
	Two	10	2
	Three	2	1
	Four	4	0
Total		100	100
Housing Status	Own the house	14	32
	Parent's home	18	20
	Friends' home	20	7
	Siblings' home	4	5
	Homeless	11	10
	Lodger	33	26
Total		100	100
Currently living with	Spouse	7	31
	Family (Parents/	28	29
	Friends	27	23
	Alone	29	12
	Others	9	5
Total		100	100
Number of family members staying together (Mean (Min - Max))		2.23 (0 - 11)	2.49 (0 - 8)
Family members	< 3 members	64	58
	3 – 6 members	31	40
	> 6 members	5	2
Total		100	100

Source: Survey data

In Table (4.3), it describes that housing status for PWID of both groups, the higher number of house owning is shown in methadone clients (32%) than non-methadone clients (14%). The number of PWID who lived in friends' home is higher in non-methadone group (20%), and also the number who lived in leasing home is also higher in non-methadone group (33%). It can say that that large volume of non-methadone clients is migrant who lived at friend's home and leasing home. In the living at parent's home, number of methadone clients (20%) is greater than non-methadone clients (18%).

In the concern of the care giver who lived together with clients, the highest numbers of non-methadone clients are living alone, which counted 29. Most of the non-methadone clients have no care giver and they are staying alone. The highest numbers of methadone clients are living with spouse, which counted 31. Second highest number of methadone clients are living with parents, which counted 29. Methadone clients have care giver as spouse and some have care giver as parents.

Regarding with the number of client's family member, mean number of client's family member for non-methadone clients is 2.23 members (range: (0 to 11 members) and methadone clients is 2.49 members (range 0 to 8 members).

Table (4.4) Employment of Respondents

Employment of Respondents		Non-Methadone Clients	Methadone Clients
Current job (Employment)	Jade Broker	5	8
	Private Employee	6	9
	Seller/Trader/Merchant	5	18
	Daily Labor	11	11
	Odd jobs (Yaymasay)	67	50
	No job	6	4
	Total	100	100

Source: Survery data

Table (4.4) shows employment status of respondents. Concerning about the employment status, there are jade broker, private employee, seller, daily labor, odd jobs (Yaymasay), jobless. Highest number of the participants (67) were odd jobs (Yaymasay), followed (11) by daily labors. (6) reported as no job for non-methadone clients. The highest number of methadone clients worked as odd jobs (Yaymasay),

counted as 50. The second highest number of occupation is seller, counted as 18. There are 4 reported as jobless in methadone group. Both methadone clients and non-methadone clients are working as odd job (Yaymasay) who select through the truckloads of rubble discarded by the companies in the hope of finding hidden lumps of jade. Harsh working conditions for these Yaymasay cause many to turn to drugs.

Table (4.5) Income and Saving Distribution of Respondents

Employment of Respondents		Non-Methadone Clients	Methadone Clients
Daily Income	No income	14	4
	< 5000 Kyats	21	17
	5000 - 10000 Kyats	49	49
	>10000 Kyats	16	30
	Total	100	100
Income enough for family	Sufficient	4	28
	Can Save	17	47
	Sometimes Borrowing	54	20
	Monthly Borrowing	25	5
	Total	100	100
Personal average saving amount for family per day (Mean (Min - Max))		3911 (1000 - 8000)	4553 (3000 - 8000)
		F = 20.591, P value = 0.08	
Personal average saving amount for family per day	1000	2 (12%)	0
	1500	1 (6%)	0
	2000	2 (12%)	0
	3000	2 (12%)	13 (28%)
	4000	3 (18%)	15 (32%)
	5000	4 (24%)	7 (15%)
	6000	1 (6%)	8 (17%)
	7000	1 (6%)	0 (0%)
	8000	1 (6%)	4 (9%)
Total		17	47

Source: Survey data

Table (4.5) shows daily personal income distribution and daily saving distribution of respondents. 14 out of 100 non-methadone clients and 4 out of 100 methadone clients responded that there is no average personal daily income. 21 out of 100 non-methadone clients responded that their average personal daily income is less than 5000 Ks but 17 out of 100 methadone clients did. For average personal daily

income ranged from 5000 Ks to 10000 Ks, 49 out of 100 non-methadone clients and 49 out of 100 methadone clients responded. For average personal daily income greater than 10000 Ks, the (16) number of non-methadone clients and the (30) number of methadone clients responded.

With the characteristics of average daily income, the survey collects the data whether the income is enough for family. The respondent's answer included as 4 categories, such as sufficient, can save, sometimes borrowing and monthly borrowing. The highest number of sufficient family's income is found in methadone client group with the number of 28 counted, whereas 4 counted for non-methadone clients. Regarding income saving, the (17) number of respondents from non-methadone group and the (47) number of respondents from methadone group are found. Methadone respondents can save money more than non-methadone respondents.

Mean personal average saving amount for family per day is 3911 kyats (Range: 1000 – 8000 Kyats) for non-methadone and for family per day is 4553 kyats (Range: 3000 – 8000 Kyats) for methadone group. P value $0.08 > 0.05$, so there is no significant different in average amount saving for family per day between methadone and non-methadone clients.

The socio-demographic conditions of methadone clients and non-methadone clients are not so much different because all non-methadone clients and some of methadone clients are continuing drug abusing. Whether the clients taking on methadone or not, the socio-demographic conditions cannot be different enough to show it. In addition, both groups are similar in abusing, injecting illicit drugs, having negative consequences of social, economic, and health.

4.3.2 Comparison of Perception of Social Inclusion within their Social Network among Methadone Respondents and Non-methadone Respondents

WHO (1995, 1996) recommended to assess status of social inclusion through collecting information on personal relationships and social support to understand the quality of life of individuals. Social support, that is, the existence of people on whom the individual can rely in times of stress. This is of particular relevance given the stress associated with opioid dependence. The social inclusion related questionnaires were developed adapting those from Keyes (1998) and WHO (1995 and 1996) (WHO, 2018b) related questionnaires from Palmore and Luikart (1972) which were already validated.

Under this section questionnaires, perception of social inclusion within their social network among methadone and non-methadone respondents include you feel like you are important person within your social network, you believe people in your social network would listen to you, value you as a person, kind on you, trust you, care about your problem, feel happy about your relationship with others in your social network and satisfied with the support you get from the people in your social network.

Likert scale with five possible responses by ranking with ordinal scale in (1) for "Not at all" to (5) for "Extremely" for each statement was used for social conditions, which has 8 questions. Five-point scale with the midpoint representing a moderate opinion, and the other four choices expressing a little or very much and extremely or not at all. "Extremely" is usually assigned a value of five and "Not at all" a value of one, so any average resulting in a number 3 and greater indicates that good social inclusion, while one below 3 indicates that bad social inclusion.

Table (4.6) Comparison of Perception of Social Inclusion within their Social Network among Non-methadone and Methadone Clients

Perception of Social Inclusion within their Social Network	Non-Methadone Clients		Methadone Clients	
	Mean	Std. Deviation	Mean	Std. Deviation
You feel like you are an important person within your social network	2.47	1.029	4.03	0.915
You believe people in your social network would listen to you	2.81	0.971	4.09	0.767
You believe other people in your social network value you as a person	2.85	0.989	4.17	0.829
You believe that people in your social network are kind on you	2.82	0.989	4.17	0.842
You feel that people in your social network trust you	2.55	0.999	4.18	0.845
You think that people in your social network care about your problems	2.60	1.005	4.17	0.877
You feel happy about your relationship with other people in your social network	2.70	1.049	4.07	0.946
You feel satisfied with the support you get from people within your social network	3.01	0.959	4.07	0.844
Average Scoring	2.73	0.999	4.12	0.858

Source: Survery data

Table (4.6) shows comparison of perception of social inclusion within their social network between non-methadone respondents and methadone respondents, 8 questions are asked.

The methadone clients responded highest in the question of feeling that people within their social network trust them, mean score 4.18. The methadone clients responded same mean score in three questions of value them, kind on them and care about their problem, mean score 4.17. The third highest mean score is 4.09, the question of listen to them. Methadone clients responded same mean score in two questions of feel happy about the relationship with other people in their social network and satisfied with the support get from them, mean score 4.07. The least mean score is 4.03, the question of feel like an important person. Methadone clients responded each questions of result average score are greater than 3 which indicates that good social inclusion within their social network in methadone group.

The non-methadone clients responded highest in the question of satisfied with the support get from people within their social network, mean score 3.01 which is greater than 3 shows good. The second highest mean score is 2.85 the question of value them. The third highest mean score is 2.82, the question of kind on them, follow by mean score 2.81, the question of listen to them. Non-methadone clients responded the mean score with 2.70 for the question of feel happy about the relationship with other people in their social network. Non-methadone clients responded the mean score with 2.60 for the question of care about their problem. The least mean score is 2.55, the question of trust them. Apart from satisfied with support get from those live together that other 7 questions of result average score are below 3 indicates that bad social inclusion in non-methadone.

Methadone clients responded higher in all questions than non-methadone clients. Every mean score in each question are responded higher in methadone client group than non-methadone client group. The average mean score of methadone client is 4.12 (Range: 4.03 – 4.18) and that of non-methadone client is 2.73 (Range: 2.47 – 3.01). The average standard deviation of methadone client is 0.85 and that of non-methadone client is 0.99. The average standard deviation of non-methadone group is larger than methadone group. The survey finding shows that after methadone treatment, higher proportion of clients attained good in social inclusion within their social network.

4.3.3 Comparison of Risk Practices of Non-methadone and Methadone Clients

In descriptive analysis and comparison of risk practices between two groups, the variable of age of first injection of drugs, injected any illicit drugs used, type of illicit drugs used during last 6 months, frequency of drug injected, expense on drug using per day, frequency of used needle sharing from others and to others.

Table (4.7) Comparison of Risk Practices of Non-Methadone Clients and Methadone Clients

Risk Practices		Non-Methadone	Methadone Clients
Age of first injection of drug use (initiation of drug use)	< 24 yr	48	37
	24 yr - <34 yr	39	43
	34 yr - <44 yr	11	17
	> 44 yr	2	3
Total		100	100
Any illicit drug used during last 6 months	Yes	100	43 (43%)
	No	0	57 (57%)
Total		100	100
Type of illicit drug used	Opium	2	0
	Heroin	98	43 (100%)
Total		100	43
Frequency of drug injected	Hasn't hit up	0	0
	Once a week	5	38 (88%)
	Once a day	7	0
	2-3 times per day	55	5 (12%)
	> 3 times per day	33	0
Total		100	43
Expenses by category	< 5000 Ks	33 (33%)	27 (63%)
	5000 Ks - 10000	57 (57%)	11 (26%)
	10000 Ks - 15000	6 (6%)	5 (12%)
	15000 Ks - 20000	3 (3%)	0
	> 20000 Ks	1 (1%)	0
Total		100	43
Frequency of Used needle sharing from others	Never	72	43 (100%)
	One time	10	0
	Two times	14	0
	3 - 5 times	3	0
	6 - 10 times	1	0
Total		100	43
Frequency of your used needle sharing to others	Never	93	43 (100%)
	One time	3	0
	3 - 5 times	4	0
Total		100	43

Source: Survey data

Table (4.7) shows comparison of risk practices among non-methadone and methadone clients. Concerning about the age of first injection of drug, non-methadone clients responded the highest frequency below 24 years of age, counted number (48), second highest is age between 24 and less than 34 years, counted number (39). The methadone clients responded the highest number in between 24 and less than 34-year group, counted number (43), second highest in below 24-year group, counted number (37). The age of drug initiation in methadone group is older than non-methadone group.

Concerning illicit drug during last 6 months, 100% non-methadone clients responded that they are using illicit drug during last 6 months but only 43% methadone clients responded that they are using illicit drug during last 6 months. Some of the respondents who are under methadone treatment are still using illicit drug. Regarding type of drug used through injecting during last 6 months, the highest number of respondents is using heroin in both group.

Concerning frequency of drug injected, 55% injecting 2-3 times per day, followed by 33% responded injected more than 3 times per day, 7% responded once a day, 5% respondents once a week from non-methadone group. Among 43 respondents from methadone group who used illicit drug during last 6 months, 88% responded injected once a week and 12 % injected 2-3 times per day from methadone group. Frequency of drug injected in methadone group is lesser than non-methadone group. Lesser frequency of drug injected means lesser change to get blood bone diseases through contaminated needles and syringes.

Regarding with the expenses of drug using per day, the expense is categorized into 5 groups, from below 5000 Ks per day and then with the interval of 5000 Ks up to 20000 Ks and above. For non-methadone clients, the highest respond rate such as 57% of non-methadone clients responded in between 5000 – 10000 Ks expense group, second highest counted as 33% in below 5000 Ks expense group. From methadone group, 63% answered expense in below 5000 Ks per day and 26% answered expense in between 5000 – 10000 Ks. Less expense using for drugs in methadone group.

Regarding with the sharing of contaminated needles, it included frequency of used needle sharing from others during last 6 months. All respondents from methadone group responded that they never shared needle from others during last 6 months. But 28% of non-methadone responded shared contaminated needles from

others. 14% shared two times during last 6 months, followed by 10% shared one time, 3% shared between 3 to 5 times and 1% shared between 6 to 10 times. Sharing of needles and syringes puts the drug users concerned at risk for HIV via the transmission route of HIV-contaminated blood and other blood borne viruses (e.g. hepatitis B and C).

Regarding the frequency of your used needle sharing to others during last 6 months. All respondents from methadone group responded that they never shared their used needle others during last 6 months. 4% shared between 3 to 5 times and 3% shared one time their used needle to other during last 6 months respectively.

The survey finding shows that some methadone clients may not stop injecting drug use but they reduce the frequency of drug abusing than non-methadone clients. Moreover, methadone respondents are not sharing needle and syringes from and to others which can reduce the risk of HIV transmission and other blood bone viruses. The survey also shows that lesser frequencies of drug injected found in methadone clients.

4.3.4 Comparison of Drug Use Related Health Problems between Methadone Clients and Non-methadone Clients

Prevalence of important drug use related infections; HIV and Hepatitis B infection among participants are also analyzed using the response provided. According to the questionnaires, drug use related harms to health include frequency of overdose happened during last one year, history of detained or imprisoned or incarceration, history of hospital admission due to drug use related illness, history of injection abscess happened, HIV and Hepatitis B status and knowledge level of drug related harms to health.

Table (4.8) shows comparison of drug use related health problems between non-methadone and methadone clients. Concerning about frequency of overdose happened last 12 months between methadone clients and non-methadone clients, 13 out of 100 non-methadone clients and 2 out of 100 methadone clients responded that they have been overdosed 1-5 times during last 12 months. The number of non-methadone clients responded higher than the number methadone clients. P value $0.003 < 0.05$, so there is significant different in frequency of overdose happened between methadone clients and non-methadone clients.

Regarding with history of detained or imprisoned or incarceration due to drug-related crimes during last 12 months, 36 out of 100 non-methadone clients responded that they have been arrested due to illicit drug abusing. All methadone clients responded that they did not have any history of detained or imprisoned or incarceration due to drug-related crimes during last 12 months. P value $0.000 < 0.05$, so there is significant different in history of imprisoned due to drug-related crimes between methadone clients and non-methadone clients.

Table (4.8) Comparison of Drug Use Related Health Problems between Non-methadone and Methadone Clients

Drug Use Related Health Problems		Non-Methadone Clients	Methadone Clients	Value	df	Asymptotic Significance (2-sided)
Frequency of Overdose happened past one year	Never	87	98	8.721 ^a	1	0.003
	1 - 5 times	13	2			
	Total	100	100			
History of imprisoned last 12 months	No	64	100	43.902 ^a	1	0.000
	Yes	36	0			
	Total	100	100			
History of hospital admission	No	97	99	1.020 ^a	1	0.312
	Yes	3	1			
	Total	100	100			
History of injection abscess	No	81	98	15.376 ^a	1	0.000
	Yes	19	2			
	Total	100	100			

Source: Survey data

In Table (4.8) regarding the past history of admission to hospital due to drug-related diseases during last 12 months, 3 out of 100 non-methadone clients and 1 out of 100 methadone clients responded that they have been admitted to hospital for drug-

related health problems. P value $0.312 > 0.05$, so there is no significant different in history of hospital admission between methadone clients and non-methadone clients.

Survey also included the past history of injection abscess during last 12 months. 9 out of 100 non-methadone clients and 2 out of 100 non-methadone clients responded that they had been history of injection abscess during last 12 months. P value $0.000 < 0.05$, so there is significant different in history of abscess between methadone clients and non-methadone clients.

The survey finding shows that methadone also reduce overdose, the drug related illness and injection abscess. Due to the saving of expense for drugs and reducing frequencies of drug use, methadone also mitigate the drug related crime rate and arrests.

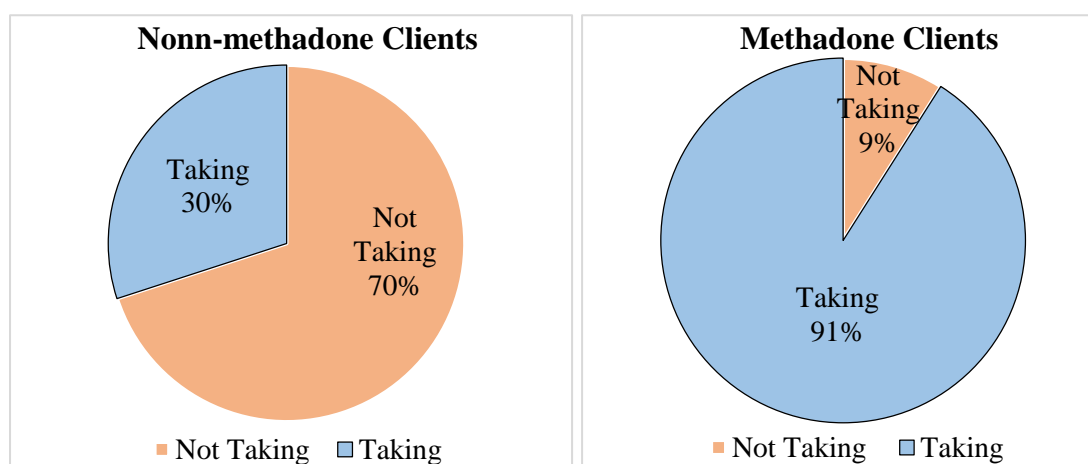
Table (4.9) HIV Status and ART Treatment Taking of Respondents

HIV Status and ART Treatment Taking		Non-Methadone Clients	Methadone Clients
HIV status	Positive	70	32
	Negative	20	68
	Not tested yet	10	0
Total		100	100
PHA On ART or not	Not on ART	49 (70%)	3 (9%)
	On ART	21 (30%)	29 (91%)
Total		70	32

Source: Survey data

In Table (4.9), HIV testing results between methadone and non-methadone clients, 70 non-methadone clients reported HIV positive, 20 non-methadone clients reported HIV negative and 10 non-methadone respondents do not know their status. All methadone respondents have been tested for HIV because methadone drug treatment center enrolled clients with the mandatory HIV testing. 32 non-methadone clients reported HIV positive, 68 non-methadone clients reported HIV negative. The survey shows that higher number of non-methadone clients tested positive than methadone clients. Moreover, HIV testing can be done free of charge at Drop in Centers where they use to take rest but non-methadone clients are not tested HIV yet.

Figure (4.1) ART Receiving among HIV Positive Respondents



Source: Survey data

Of 70 HIV positive participants from non-methadone group, 30% reported taking antiretroviral treatment (ART) and 70% reported not taking antiretroviral treatment (ART). Of 32 HIV positive participants from methadone group, 91% reported receiving Antiretroviral Treatment (ART) and only 9% reported not on ART. The survey shows that higher number of clients taking HIV treatment found in methadone group.

Table (4.10) Hepatitis B Status and Hepatitis B Vaccination Done of Respondents

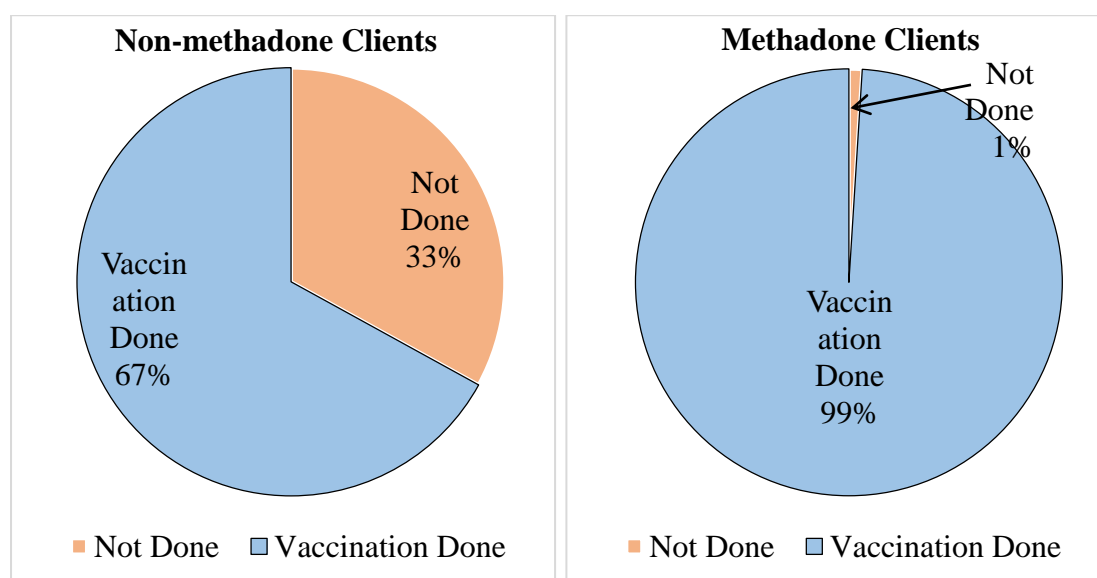
Hepatitis B Status and Hepatitis B Vaccination Done		Non-methadone Clients	Methadone Clients
HBV status	Positive	40	15
	Negative	43	80
	Not tested yet	17	5
Total		100	100
Hepatitis B vaccine	No	14 (33%)	1 (1%)
	Yes	29 (67%)	79 (99%)
Total		43	80

Source: Survey data

Table (4.10) shows hepatitis B status and hepatitis B vaccination done of respondents. Regarding the Hepatitis B testing results between methadone and non-methadone clients, 40 non-methadone clients reported Hepatitis B positive, 43 non-

methadone clients reported Hepatitis B negative and 17 non-methadone respondents not tested yet. From methadone group - 15 non-methadone clients reported Hepatitis B positive, 80 non-methadone clients reported Hepatitis B negative, 5 methadone respondents not tested yet. Higher number of hepatitis B positive found in non-methadone group. Even though it is free of charge to do hepatitis B testing, there are not hepatitis B testing done found in both group.

Figure (4.2) Hepatitis B Vaccination Done of Respondents



Source: Survey data

Of 43 Hepatitis B negative participants from non-methadone group, 67% reported vaccinations have been done and 33% reported not vaccinated yet. Of 80 Hepatitis B negative from methadone group, 99% reported vaccinations have been done and 1% reported not vaccinated yet. Hepatitis B vaccination can be done free of charge but the survey shows that higher number of non-methadone clients are not vaccinated yet.

4.3.5 Knowledge Level of Drug Use Related Health Problems

Regarding to access the knowledge level of drug use related health problems, questionnaires (10) are built by using set of questions of how the HIV virus can be transmitted, how the least potential to happen overdose situation and how Hepatitis B can be transmitted. Based on their knowledge level they can select more than one statement and it is possible not to select any as well. If selected correctly, the client

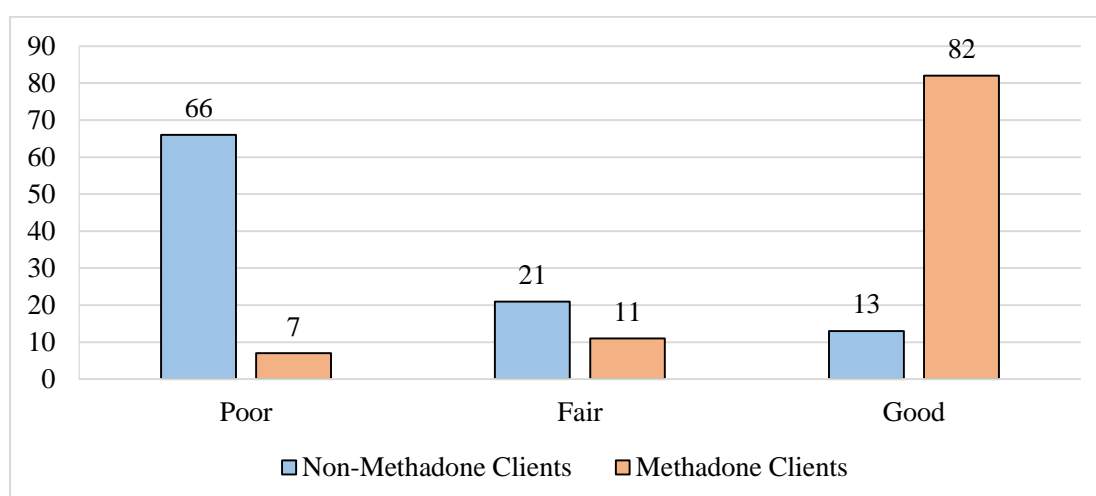
will get 2 marks. Hence possible score range was 0 to 20. If score above 15 defining good, if score 10 to 14 defining fair and if score less than 10 defining poor.

Table (4.11) Knowledge Level of Drug Use Related Health Problems

Knowledge Level of Drug Use Related Health Problems	Non-Methadone Clients	Methadone Clients	Value	df	Asymptotic Significance (2-sided)
Poor	66	7	100.926 ^a	2	0.000
Fair	21	11			
Good	13	82			
Total	100	100			

Source: Survey data

Figure (4.3) Knowledge Level of Drug Use Related Health Problems



Source: Survey data

Table (4.11) shows knowledge level of drug use related health problems. From non-methadone group, 13% responded as good on knowledge level of drug use related harms to health, 21% responded as fair and 66% as poor on knowledge level of drug use related harms to health.

From methadone group, 82% responded as good on knowledge level of drug use related harms to health, 11% responded as fair and 7% responded as poor on knowledge level of drug use related harms to health. P value $0.000 < 0.05$, so there is significant different in knowledge level of drug use related health problems between methadone clients and non-methadone clients.

It can be concluded that knowledge level on how the HIV virus can be transmitted, how the least potential to happen overdose situation and how Hepatitis B

can be transmitted is higher in methadone group because this group can easily access to health services and daily meet with health workers at drug treatment centers and well participated in health education sessions.

4.3.6 Correlation between Perception of Social Inclusion within Social Network and Six Independent Variables among Methadone and Non-methadone Respondents

Multiple Regression is used to predict dependent variable from a combination of several independent variables. In this study, if social inclusion can be predicted better from a combination of several of other variables, age, highest education level, housing status, employment, daily average income and income enough for family. Six independent variables (age, highest education level, housing status, employment, daily average income and income enough for family) are important and what is the highest possible multiple correlation of these variables with the dependent variable (social inclusion). (Morgan, 2014)

Table (4.12) Mean, Standard Deviations and Inter-correlation for Perception of Social Inclusion within Social Network and Six Predictors Variables

Variables	Non-methadone Clients				Methadone Clients			
	Adjusted R squared = 0.111				Adjusted R Squared = 0.261			
	Mean	SD	Pearson Correlation	Sig (1-tailed)	Mean	SD	Pearson Correlation	Sig (1-tailed)
Social Inclusion	2.7282	0.83233			4.1197	0.7316		
Age Group	2.39	0.875	0.056	0.291	2.68	0.815	0.047	0.32
Highest Education Level	2.84	0.825	0.248	0.006	4.22	0.991	0.234	0.010
Housing Status	4.5	2.259	-0.27	0.003	3.8	2.478	-0.32	0.001
Employment	5.47	1.636	0.031	0.378	4.29	1.585	-0.25	0.006
Daily Average Income	2.67	0.911	0.161	0.054	3.05	0.796	0.103	0.154
Income enough for family	3.07	0.891	-0.04	0.345	2.03	0.858	-0.39	0.000

Source: Survey data

To investigate the best predictors of perception score of social inclusion within their social network, simultaneous multiple regression was conducted for both groups separately. The means, standard deviations, and Pearson correlation can be found in the table (4.12). When the combination of variables to predict the perception score of social inclusion within their social network included Age, Highest education level, Housing Status, Employment Status, Daily average income and Income enough condition for family for both groups, $F(6, 93) = 3.06$, $p = 0.009$ in non-methadone group and $F(6, 93) = 6.824$, $p < 0.000$ in methadone client group.

In non-methadone client group, the variable of highest education level ($p = 0.006$) and housing status ($p = 0.003$) can predict significantly the perception score of social inclusion within their social network in this survey when all other dependent variables are included. The adjusted R square value was 0.111 and this indicates that only 11.1% of the variance in perception score of social inclusion was explained by the model and the effect size is small.

However, the survey shown that the more variables such as highest education level ($p = 0.010$), housing status ($p = 0.001$), employment condition ($p = 0.006$) and income enough for family ($p = 0.000$) can predict significantly the perception score of social inclusion within their social network when age group and personal average daily income variables are included in methadone client group. The adjusted R square value was 0.261 and this indicates that 26.1% of the variance in perception score of social inclusion within their social network was explained by the model and the effect size is large.

The survey shows that the four variables can predict the perception score of social inclusion within their social network in methadone client group but only two variables can predict in non-methadone client groups. We can find methadone treatment will add on the association of dependent variables on social inclusion within their social network perception score.

CHAPTER V

CONCLUSION

5.1 Findings

This study compares conditions between people who inject drugs taking methadone and other group not taking methadone. The focused parameters are 1. Social inclusion; 2. High risk needles sharing behavior; and 3. Health consequences caused by drug use. The findings from the survey shows that only 4.5% (9/200) female participants could be interviewed in both the non-methadone and the methadone groups since the drug use epidemic has been largely affecting the male population. It could also be concluded that minimum number of female were accessing harm reduction services and methadone program. It was not possible to explore social conditions and barriers to access harm reduction services and methadone program specifically for female in this study.

The youngest and oldest ages for non-methadone group were respectively 20 and 55 years. The youngest and oldest ages for methadone group were respectively 20 and 64 years. The majority of age between two groups is between 25 yr. and 44 yr. It was clear that the drug use problem had been affecting youth largely and those from productive age group, potentially negatively affecting the economy and the country's productivity, as the proportion of persons aged 15 – 44 is considerably high. This may be because people in the working age migrate from other States and Regions to work in the mines in Kachin. The survey was conducted at Hpakant Kachin State but Kachin ethnicity is the least among respondents 24% (48/200). Although overall demographic statistics were not analyzed, the high percentage of other than ethnic Kachin in this study indicates high (labor) migration of different ethnicity from other States and Regions seeking to work in the mines in Kachin. The latter is an important observation from an infectious disease control perspective among migrants returning to place of origin, with consequence risk – if not controlled - of aggravated expansion of infections contributing to a general epidemic.

In both methadone and non-methadone groups, the majority are at education level of primary and middle school. The relative high level of participants of this cohort who finished middle school could indicate an increase of the extent of drug problem in Myanmar, and confirming the anecdotal evidence that drug use and risk taking behavior is spreading into schools and universities. The study revealed that the maximum number of both of non-methadone and methadone clients were working odd jobs (Yaymasay). The majority of the injecting heroin users are the Yaymasay stone foragers who live a hand-to-mouth existence toiling day and night amongst steep mountains of rubble and finding solace in drug use. The latter indicates that the harsh living and labor conditions contribute to risk-taking behavior and consequent increased levels of drug and health issues, such as (blood-born) infectious disease transmission.

In this study, social inclusion within their social network was assessed between people who inject drug (PWID) with and without methadone. Every mean score in each question were responded higher in methadone group than non-methadone group. The average standard deviation of non-methadone group is larger than methadone group. The survey finding shows that after methadone treatment, higher proportion of clients attained good in social inclusion within their social network.

Regarding the drug using condition, the age of first injection in methadone group was older than that of non-methadone clients. The latter indicate a relative maturity in health seeking behavior and decision-making among methadone clients. Concerning using illicit drug during last 6 months, only 43% in methadone group were using illicit drug during last 6 months but all 100% in non-methadone group are using illicit drug during last 6 months. The relative low poly-drug use among the methadone cohort indicates positive impact and reduced risk for the transmission of blood-born infectious diseases. Regarding type of drugs used through injecting during last 6 months, the main drug in both group is heroin. Frequency of drug injection in non-methadone group was higher than that of in methadone group. More than 50% of respondents from non-methadone group injected 2-3 times per day whereas methadone group injected only once a week. Concerning the expense amount of drug use per day, non-methadone group spent more money to buy drugs than that of in methadone group. The survey responded that the personal average saving for family

per day of methadone clients is significantly higher than that of non-methadone clients.

Regarding the sharing practices of injecting equipment from others during last 6 months, the highest response from non-methadone clients shared two times but all methadone clients never shared needle from others. Regarding the frequency of your used needle sharing to others during last 6 months, the highest respondent from non-methadone clients shared their used needle to others between 3 to 5 times but all respondents from methadone group never shared their used needle to others. These finding confirms international evidence that that drug related harms and risk-taking behavior among PWIDs significantly reduce by taking methadone maintenance therapy. Participants on methadone show a positive increase in knowledge, practice attitude and behavior; methadone reduce the frequency of drug misuse, reduce risk behavior such as sharing of needles and syringes for more than one time. It can also reduce the expense spending on drug misuse.

In this study, we can see that the drug related harms exist in both groups, such as blood borne infections (HIV and HBV), history of overdose, arrested case due to drug related crime, injection abscess and hospitalization due to drug related illness. HIV prevalence in non-methadone is higher than methadone group and also taking treatment for HIV is 3 times higher in methadone group than non-methadone group. Hepatitis B virus (HBV) infections rate in non-methadone is higher than methadone group and HBV not testing rate is 3 times higher in non-methadone group than methadone group. Hepatitis B can be vaccinated and the rate of vaccinated case is higher in methadone group than non-methadone group.

The number of overdose episodes in non-methadone group is 6 times higher than methadone client. Drug related arrested cases never occurred among methadone clients group during last one year. Hospitalization due to drug related illness and injection abscess happened more in non-methadone group. Methadone group has better knowledge level of drug use related harms to health than non-methadone group.

Methadone group may not stop injecting drug use but significantly reduce the frequency of drug use (relapse) compared to non-methadone clients. In this survey, the positivity rate of blood borne virus infection such as HIV and HBV is higher and health-seeking behavior such as taking treatment for HIV and HBV vaccination is higher in the methadone group. Methadone treatment also reduce the drug related illness, overdose and injection abscess. Due to the saving of expense for drugs and

reducing frequencies of drug use, methadone treatment mitigate the drug related crime rate and arrests. Among the non-methadone clients group, the study shows a significant increase in the frequency of sharing of used needle from others and frequency of sharing used needle to others, hence the negative impact on the rates of HIV infection, Hepatitis B virus infection and injection abscesses.

5.2 Suggestions

According to the findings and analysis from this survey, the following actions are recommended. Since the study illustrates unequal access of female drug users to methadone program, the government, multilateral and non-governmental actors are strongly encouraged to explore the depth of drug use and related problems among female and barriers and henceforth develop strategies for reaching them with effective prevention and harm reduction services. This study also suggested higher drug use problem among youth and 25-44-year age group, which calls for immediate translation of recommendations made in the Myanmar Drug Policy in into actions; significantly allocate and invest in large-scale harm reduction and prevention services and as recommended in the Myanmar Drug Policy to consider to decriminalize drug use and possession for personal use, to lower the rates of incarceration and increase evidence-based health focus. The study also provides the evidence that the majority of drug users had middle and high education level, indicating the need of drug use prevention and harm reduction activities expand to focus on school youth and the university students, which were not actively targeted by the national programmes currently.

The evidences showed the improvement of social inclusion among drug users on and after methadone treatment. Therefore, expansion of (community-based) methadone treatment centers should be implemented so that non-methadone clients who have difficulties in transportation to access methadone can easily take part in methadone program. If there is wrong perception on methadone treatment or if drug users do not see the benefit or effectiveness of methadone treatment, drug users who are not on treatment may not have motivation to take part in the treatment. Hence, regular and frequent awareness raising health education sessions and information campaigns about the advantages of methadone are strongly recommended, aimed and directed not only to non-methadone clients, but also to their family members and communities at large. Psychosocial support from the family and the community is

strongly encouraged and best implemented as integral part of motivating non-methadone clients to take part in methadone treatment.

Evidence shows the importance of income generation activities, and recommended to be developed for methadone clients after stabilizing for a period of time. The establishment of self-help groups should be encouraged and facilitated with and for methadone clients, to promote enrolling of naïve PWID into methadone programs. Methadone and non-methadone clients may find that self-help groups provide emotional support and may derive comfort from knowing that they are not alone in the struggle against opioid dependence. Government, donor community and the private organizations should focus on strengthening peer community networks and indigenous organizations at the local level.

Non-methadone clients are sharing used needles. The sharing of injecting equipment may be due to difficulty in sterile needle and syringes accessibility. Resources – as part of the national health finance system - should be made available for community-based harm reduction services to promote and increase significantly the distribution of sterile needle and syringes in most remote rural conflict and mining areas where drug use is highly prevalent and increase number of compassionate awareness campaigns not to share the injection equipment.

Methadone programs cannot completely circumvent clients' occasional relapse but are significantly reducing drug use related harms to health, overdose, and injection abscess. Most of the clients on methadone program are not involved in criminal activity to get money and buy drugs. To reduce the drug related harms in society, harm reduction and methadone programs should be promoted by empowering the clients, by reducing the stigma and discrimination against drug users and by raising the awareness of blood borne viral infections and risk of drug related harms. Taking ART treatment and vaccination programme against hepatitis should be improved through better and consistent health education of PWID as they enter the MMT programme. This would not only be important for affected individuals, it would also prevent further transmission of infection within the community.

The study left the researcher with untold stories about related problems of female drug users. The author strongly suggest further research is needed to explore more about female drug users' situation, issues, context and resolve, using qualitative method how best reach, engage and enroll more pointed female drug users into care and methadone maintenance program. In addition, another further operational

research on the impact of stigma and discrimination and the role of peers is recommended and how vulnerable populations without social support can be better served.

Drug use and its health consequences is a global threat absorbing the nation's wealth, economy and its workforce, especially among younger generations. Evidence-based strategies and innovations are essential. Although the study was conducted within a limited timeframe and resources, it provided new evidences which are valuable to critically review, reflect and address in prevention and control of drug use problem, harm reduction as well as enforcing enabling societal environment before it become too late to reverse the problem in the country.

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