“Knowledge, Attitude, and Preventive Practices concerning HIV/AIDS among Men who have Sex with Men in Yangon, Myanmar.”

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"ความรู้ ทัศนคติ และการปฏิบัติเพื่อป้องกันการติดเชื้อเอชไอวี/เอดส์ ของกลุ่มชายรักชายในเมืองย่างกุ้ง ประเทศเมียนมา"

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การศึกษานี้มีวัตถุประสงค์เพื่อศึกษาความรู้ ทัศนคติ และการปฏิบัติเพื่อป้องกันการติดเชื้อเอชไอวี/เอดส์ ของกลุ่มชายรักชายในเมืองย่างกุ้ง ประเทศเมียนมา

การวิจัยครั้งนี้เป็นการศึกษาภาคตัดขวางโดยการตอบแบบสอบถาม ในกลุ่มชายรักชาย อายุ 18-59 ปี จำนวน 422 คน ที่มารับบริการที่องค์กรเมดดิซีน ดู มองค์ เมืองย่างกุ้ง ประเทศเมียนมา โดยการเลือกตัวอย่างตามความสะดวกและการเลือกตัวอย่างแบบลูกโซ่ ในส่วนของการวิเคราะห์ข้อมูลนั้น ได้ใช้สถิติการวิเคราะห์ตัวแปรเดียว ตัวแปรสองตัว และตัวแปรหลายตัว ที่ระดับความเชื่อมั่นร้อยละ 95

ผลการวิจัยพบว่า จากกลุ่มตัวอย่าง 422 คน ร้อยละ 51.4 มีอายุระหว่าง 25-35 ปี ลักษณะของกลุ่มตัวอย่าง พบว่า ร้อยละ 32.5 เป็นชายรักชายที่มีลักษณะความเป็นชาย ร้อยละ 51.2 เป็นชายรักชายที่มีลักษณะความเป็นหญิง และร้อยละ 16.4 เป็นชายรักชายที่ชอบทั้งสองเพศ ในส่วนของความรู้ พบว่า กลุ่มตัวอย่างมีความรู้ในระดับสูงและระดับปานกลาง ร้อยละ 49.1 กลุ่มตัวอย่างร้อยละ 61.8 มีทัศนคติกลางๆ ต่อการปฏิบัติเพื่อป้องกันการติดเชื้อเอชไอวี/เอดส์ สำหรับการปฏิบัตินั้นพบว่าร้อยละ 51.9 มีการปฏิบัติเพื่อป้องกันในระดับกลาง ร้อยละ 25.4 มีการปฏิบัติในระดับสูง ในส่วนของความสัมพันธ์พบว่า ปัจจัยที่มีผลต่อการปฏิบัติเพื่อป้องกันการติดเชื้อเอชไอวี/เอดส์ อย่างมีนัยยะสำคัญ ($P< 0.05$) คือ อายุ การศึกษา การเคยได้รับการตรวจเอชไอวี การเคยได้รับการตรวจโรคติดต่อทางเพศสัมพันธ์ใน 12 เดือนที่ผ่านมา การได้รับบริการเกี่ยวกับสุขภาพอย่างสม่ำเสมอ การใช้ถุงยางอนามัยในการมีเพศสัมพันธ์ทางทวารหนักครั้งแรก การมีเพศสัมพันธ์กับผู้หญิง และการมีคู่ชั่วคราวในระยะ 3 เดือนที่ผ่านมา ความรู้ และทัศนคติ กลุ่มตัวอย่างที่มีความรู้ระดับสูง จะมีการปฏิบัติเพื่อป้องกันการติดเชื้อเอชไอวี/เอดส์มากกว่าผู้ที่มีความรู้ในระดับต่ำ 3. 34 เท่า และผู้ที่มีทัศนคติเชิงบวกจะมีการปฏิบัติเพื่อป้องกันการติดเชื้อเอชไอวี/เอดส์มากกว่าผู้มีทัศนคติในเชิงลบ 2.63 เท่า

แม้ว่ากลุ่มชายรักชายจะมีความรู้เรื่องเอชไอวี/เอดส์และทัศนคติที่ค่อนข้างดี แต่ในเรื่องของการปฏิบัติเพื่อป้องกันการติดเชื้อเอชไอวี/เอดส์นั้น ยังไม่ดีเท่าที่ควรนัก โดยเฉพาะในกลุ่มชายรักชายที่มีความรู้ในระดับต่ำ และมีทัศนคติในเชิงลบ

สาขาวิชา สาธารณสุขศาสตร์ ลายมือชื่อนิสิต .....

ปีการศึกษา 2560 ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

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This study aimed to provide information for both governmental and non-governmental organizations on knowledge, attitude, and preventive practices concerning HIV/AIDS among Men Who Have Sex with Men (MSM) in Yangon city, Myanmar.

A cross-sectional survey with a self-administered questionnaire was applied in this study. Yangon city and Medecins du Monde Organization (MdM) were selected by using purposive sampling method. 422 MSM aged 18 to 59 years from the organization were recruited by using mixed method with convenience and snowball sampling methods. Analysis of the variables was done using univariate, bivariate, and multivariate analysis at 95% confidence level.

Out of 422 MSM, majority of them (51.4%) were in 25 -35 years of age. Among three characteristics of MSM respondents, 32.5% was Apone (Masculine MSM), 51.2% was Apwint (Feminine MSM), and 16.4% was Tha Nge (Bisexual). Majority of them had high level of knowledge (49.1%), and moderate level of knowledge (41.9%). 61.8% were having neutral attitude towards HIV/AIDS and barriers on HIV/AIDS prevention. Half of the MSM respondents (51.9%) had moderate practice level, and 25.4% had good practice level. In multivariate analysis, age, education, ever tested for HIV, ever received a sexually transmitted infection check-up in the last 12 months, regular receive HIV/STI-related health care services in MdM, first anal sex with a man using condom, having sex with women, and respondents who have casual partner in the past three months were significantly associated with HIV/AIDS preventive practices in the past three months ($P< 0.05$). Knowledge and attitude were significantly associated with practices on HIV/AIDS prevention in the past three months (p-value <0.05). The respondents with high level of knowledge were higher HIV/AIDS preventive practices by 3.34 times than those with low level of knowledge. The respondents with positive attitude performed more practices on HIV/AIDS prevention by 2.63 times than those with negative attitude.

Conclusion: Although knowledge and attitudes towards HIV/AIDS have been good among MSM, prevention has not been practiced by most of the respondents, particularly among those with low level of knowledge, and those with negative attitude.

Field of Study: Public Health Student's Signature .....

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LIST OF ABBREVIATIONS

HIV	-	Human Immunodeficiency Virus
AIDS	-	Acquired Immunodeficiency Syndrome
STI	-	Sexually Transmitted Infection
MSM	-	Men Who Have Sex With Men
PWID	-	People Who Inject Drug
FSW	-	Female Sex Worker
UNAIDS	-	The Joint United Nations Programme on HIV/AIDS
WHO	-	World Health Organization
NAP	-	National AIDS Programme
NACO	-	National AIDS Control Organization
NGO	-	Non Government Organization
MdM	-	Medecins du Monde Organization
CBO	-	Community Based Organization
MIMU	-	Myanmar Information Management Unit
MOHS	-	Ministry of Health And Sport
HSS	-	HIV Sentinel Sero-Surveillance
ART	-	Antiretroviral therapy
IDUs	-	Intravenous Drug Users
TG	-	Transgender people
PLWHA	-	People Living With HIV/AIDS
FSP	-	Female Sex Partner
MSP	-	Male Sex Partner
PrEP	-	Pre-exposure Prophylaxis

CHAPTER I
INTRODUCTION

1.1Background

Acquired immunodeficiency Syndrome (AIDS) is the deadliest pandemic disease of our time and a major global public health issue caused by the human immunodeficiency virus (HIV). Most commonly, people get or transmit HIV through unprotected sexual contacts, and the sharing of contaminated needles and syringes. Other routes of transmission include mother to child transmission and transfusion of infected blood and blood products (1). The reasons to the pandemic of the disease are poor knowledge of the disease, risky sex behavior, fragile health care, poverty, political and economic instability (2).

According to UNAIDS, 36.7 million people have been infected worldwide, nearly 1.8 million individuals became newly infected with HIV, and an estimated 1 million people have died of HIV-related causes in 2016. In Asia and Pacific region, there was around 5.1 million people living with HIV, an estimated 270 000 people newly infected with HIV, and 170 000 deaths due to AIDS in the same year (3). Among Asian countries, Myanmar has one of the highest HIV prevalence and caseloads (Asia Development Bank, 2012). In 2016, there were around 230,000 people living with HIV, 11,000 new infections reported (approximately 30 infections per day), and a further 7,800 people died from AIDS-related illnesses (3).

In most of Asia, HIV prevalence in the general population is stabilizing. However, high risk populations, such as people who inject drugs (PWID), sex workers and their clients, and men who have sex with men (MSM) and their sexual partners continue to experience significantly higher HIV infection rates compared to people in the general population (4). The epidemic in these sub-populations is driven primarily through unprotected sexual contact, risk sexual behavior, and the use of contaminated needles and syringes (5). Globally, men who have sex with men accounted for 12% of new infections in 2015, while sex workers and people who inject drugs accounted for 5% and 8% of new infections, respectively. In Myanmar, the most recent surveillance data from 2016 indicate prevalence of HIV among people who inject drug (PWID)

26.3%, among men who have sex with men (MSM) 6.4%, and among female sex workers (FSW) 5.4% (3).

Historically, the first cases of the human immunodeficiency virus were reported in 1981 among homosexual men and then consistently spreads among MSM in many countries. Globally, men who have sex with men are 24 times more likely to acquire HIV than the general population (6). Although HIV prevalence among general population is decreasing in most of the world, the prevalence among men who have sex with men keeps rising in Asia. HIV prevalence among men who have sex with men in 2015 was higher than 5% in nine of the 19 countries that reported data. HIV prevalence was particularly high in many cities and urban areas: it was 28.6% in Bangkok (Thailand), 26.6% in Yangon (Myanmar) and 20.3% in Yogyakarta (Indonesia) (7). Study shows that MSM are facing a higher risk of HIV infection than men in the general population and their behavior is contributing to increasing the number of new infections (8, 9). Those who are engaging in this behaviour are often hidden, stigmatized and discriminated against. Stigma, discrimination and violence based on sexual orientation and the criminalization of same-sex sexual practices add to the vulnerability of MSM and make them difficult to access HIV/AIDS health care services (10).

1.2 Rationale

In Myanmar, there were an estimated 252,000 men who have sex with men, corresponding to 1.4 percent of the total adult male population. Of these men, around 6.4% were HIV positive and only 52% knew their HIV status (3). Like many other countries, a large number of MSM in Myanmar are not getting tested for HIV nor have access to HIV health care services. They have generally been criminalized, abused and disregarded in description, discussions and responses to the HIV epidemic (11). Poor adequate prevention knowledge and education about the disease is also other risk factors for contracting HIV (12). As Caceres, et al. (13) points out poor access to adequate prevention and care, and the sustaining vulnerability to HIV infection highlights the importance of emphasizing on prevention packages for MSM populations. There is heightened concern that unless targeted actions are taken, the further spread of HIV among MSM is inevitable (14, 15). Today, many developing countries are cooperating to increase knowledge, attitudes and practices on HIV

prevention. Programs have been developed to reduce sexual risk behaviors and increase protective behaviors, such as promotion of condom use, voluntary counseling and testing, and information provision. Many of the programs have led to increased HIV knowledge and practices in the developing countries (16). The knowledge on HIV prevention has increased globally but still less than 50% of people in the 15 countries with the highest HIV prevalence can give correct answer on basic 4 questions regarding HIV and its transmission. Those who used a condom during the last anal sex and number of sexual partners varies widely where access and information on HIV are different from country to country (17). Additionally, global studies on HIV preventive practices among MSM have shown that poor HIV testing was associated with low knowledge on HIV, low risk perception on HIV, low perceived behavioural control, fear of positive test result and its consequences, perceived discrimination and internalized homophobia (18).

In Myanmar HIV prevalence in some locations is among the highest in the Asia Pacific region. In Yangon, among men who have sex with men, the HIV prevalence at 26.6 is the highest in a specific geographical location in the Asia-Pacific region, higher than Bangkok at 24.4% in 2012 (19). 13% of the new infections occurred among MSM, and it is estimated to increase. The rates are causing worry and should give a call to immediate action to reduce HIV epidemic in key geographical areas among MSM populations in Myanmar. In Yangon, there are a higher rate of multiple partners, sex workers and injecting drug users, lower knowledge on HIV transmission and prevention, lower contact by outreach workers and a lower rate of condom use, resulting in high HIV prevalence among these populations. Stigma and discrimination are also critical barriers to access HIV/AIDS health care services. MSM have unequal employment opportunities and poor access to proper medical treatment, which in turn put them away from safe behavior (7).

In Yangon, there are eight non-governmental organizations, apart from Government Hospitals, implementing HIV/AIDS treatment, care and support services particularly for MSM populations (Myanmar Information Management Unit, 2017).. Medecin du Monde (MdM) is one of the international non-governmental organizations, which provide a large scale of HIV/AIDS health care services to MSM living with or without HIV who come from various part of Yangon area. There is only a few previous

studies related to HIV prevention practices and MSM populations conducted in the organization although it is providing services to substantial number of MSM.

Effective HIV prevention for MSM population in Myanmar require adequate knowledge about the disease and access to health care. Proper knowledge on HIV transmission and prevention among MSM populations is critical for preventing HIV/AIDS infection, as many MSM come from rural and conservative backgrounds that deny them adequate exposure and access to safer sex knowledge, attitudes and practices. In Myanmar, only few studies have been conducted on HIV prevention and MSM because there is no accurate data, information on MSM, and they are considered as a hard to reach population (11). Therefore, it is important to explore the knowledge, attitudes and practices on HIV prevention among MSM in order to maximize knowledge and understanding among health care providers, to be aware of this population and to prepare information and prevention programs on HIV for MSM.

1.3 Research Questions

1. What are socio-demographic characteristics, history of sexual activities, the level of knowledge, attitude, and preventive practices on HIV/AIDS among MSM in Medecins du Monde Organization, Yangon, Myanmar?
2. Is there any association between socio-demographic characteristics and the level of preventive practices on HIV/AIDS among MSM in Medecins du Monde Organization, Yangon, Myanmar?
3. Is there any association between history of sexual activities, and the level of preventive practices on HIV/AIDS among MSM in Medecins du Monde Organization, Yangon, Myanmar?
4. Is there any association between the level of knowledge and the level of preventive practices on HIV/AIDS among MSM in Medecins du Monde Organization, Yangon, Myanmar?
5. Is there any association between the level of attitude and the level of preventive practices on HIV/AIDS among MSM in Medecins du Monde Organization, Yangon, Myanmar?

1.4 Research Objectives

1.4.1 General Objective

To assess the level of knowledge, attitude, and preventive practices concerning HIV/AIDS among MSM in Medecins du Monde organization, Yangon, Myanmar.

1.4.2 Specific Objectives

1. To describe the socio-demographic characteristics, history of sexual activities, the level of knowledge, attitude, and preventive practices on HIV/AIDS among MSM in Medecins du Monde Organization, Yangon, Myanmar.
2. To identify the association between socio-demographic characteristics and the level of preventive practices on HIV/AIDS among MSM in Medecins du Monde Organization, Yangon, Myanmar.
3. To identify the association between history of sexual activities and the level of preventive practices on HIV/AIDS among MSM in Medecins du Monde Organization, Yangon, Myanmar.
4. To identify the association between the level of knowledge and the level of preventive practices on HIV/AIDS among MSM in Medecins du Monde Organization, Yangon, Myanmar.
5. To identify the association between the level of attitude and the level of preventive practices on HIV/AIDS among MSM in Medecins du Monde Organization, Yangon, Myanmar.

1.5 Research Hypothesis

1. There is an association between socio-demographic characteristics and the preventive practices on HIV/AIDS among MSM in Medecins du Monde organization, Yangon, Myanmar.
2. There is an association between history of sexual activities and the preventive practices on HIV/AIDS among MSM in Medecins du Monde organization, Yangon, Myanmar.
3. There is an association between knowledge and the preventive practices on HIV/AIDS among MSM in Medecins du Monde organization, Yangon, Myanmar.

4. There is an association between attitude and the preventive practices on HIV/AIDS among MSM in Medecins du Monde organization, Yangon, Myanmar.

1.6 Operational Definitions

Men who have sex with men (MSM) : The term men who have sex with men describes males who have sex with males, regardless of whether or not they also have sex with women or have a personal or social gay or bisexual identity.(UNAIDS)

Men who have sex with men (MSM): MSM who come and use the service at the Medecins du Monde organization, Yangon, Myanmar.

Socio-demographic Characteristics include:

- **Age:** refers to the last completed birthday at the time of interview.
- **Marital Status:** refers to the status of the current marital status of the respondents at the time of interview. It will be categorized as 'Never married', 'formally married', and 'live in with a partner but not married'.
- **Education:** refer to the highest attained levels of education of the respondents at the time of interview and it will be categorized as 'Primary School (grade1-4)', 'Secondary School (grade 5-8)', 'High School (9-10)', and 'University graduate (finished university)'.
- **Occupational status:** refers to the current occupation of the respondents at the time of interview and it was categorized into 'Private/Government employee', 'NGO/INGO staff', 'Own business', 'Work in fashion sector (Hairstyle, Make-up, Dress Designer)', 'Natkataw (Spirit medium)', and 'others (specify)'.
- **Monthly Income:** refers to the monthly income of the respondents at the time of interview, and it will be categorized as 'Sufficient', 'Not Sufficient', and 'Have Saving'.
- **Living arrangement:** refers that whether the respondent is 'almost living alone', 'with parents', 'with wife', 'with a male partner', or 'with friends'.

Characteristics of MSM mean three kinds of MSM in Myanmar culture which are Apone (Musculine MSM), Apwint (Feminine MSM), and Tha Nge (Bisexual MSM).

(1) **Apone (Musculine MSM),** biological males who are perceived as masculine in their outward dress and behaviour. These males tend not to be open about their same sex attractions, and are more likely to also have relationships with females and to have families. In some cases these men may only maintain relationships with females in order to hide their same sex attractions.

(2) **Apwint (Feminine MSM),** biological males who openly behave and dress as women. This include persons who have transitioned and have undergone sex reassignment *surgery*, as well as those who dress and behave as females.

(3) **Tha Nge (Bisexual MSM),** biological males who are perceived as masculine in their outward dress and behaviour. They may have sex with males and females and, in some cases, could be classified as bi-sexual. Their male sex partners are often Apwint or Apone.

HIV/STI status: means whether or not the respondents had been diagnosed with STIs and also whether they were infected with HIV.

History of sexual activities include:

- **Sexual history of first sex:** age, type of partner at first sex with anyone, first anal sexual intercourse with a man using condoms, and first anal sex with or without any presents.
- **Sexual experience with female:** refers whether respondents have sexual experience with women.
- **Sexual experience with steady partner:** refers whether respondents have steady partner or not, type of steady partner, oral sex history, and anal sex history. (Steady partner is someone you have sex with, and are committed to.)
- **Sexual experience with causal partner:** refers whether respondents have causal partner or not, type of causal partner, oral sex history, and whether respondents

give or receive any presents to have sex with causal partner(s). (Causal partner is someone you have sex with, but don't feel committed to.)

- **Sexual history of having sex for money:** means whether respondents had sex with any male who gave money for sex in the last 3 months, and whether respondents used condoms at last sex with them.

Knowledge on HIV/AIDS is the ability of a person to have correct understanding about HIV/AIDS in terms of causative agents, signs and symptoms, mode of transmission, prevention, and information on HIV/AIDS.

Attitude towards HIV/AIDS refers to the respondents' viewpoint towards HIV/AIDS itself, and barriers on HIV preventive practices.

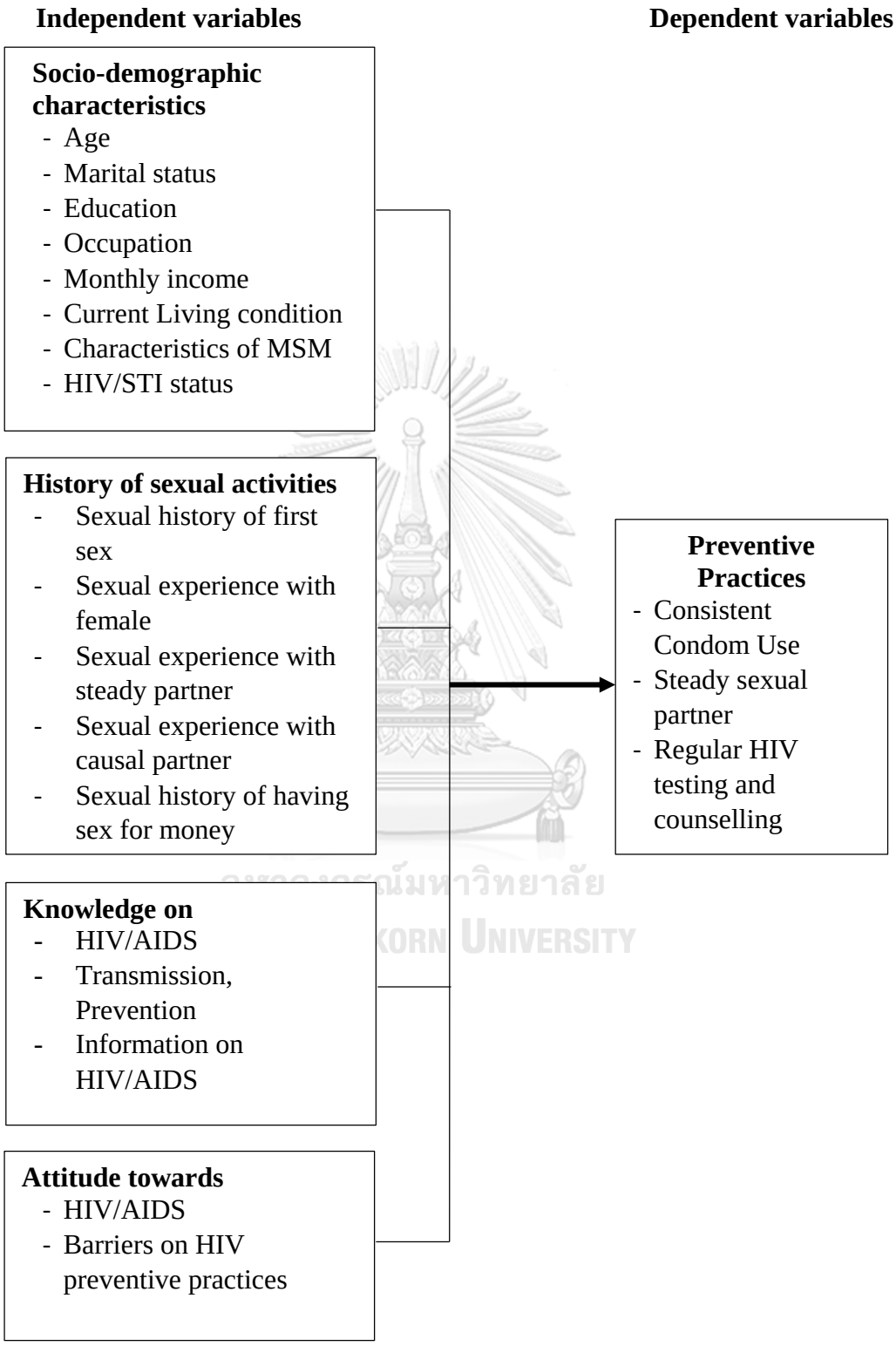
Preventive practices of HIV/AIDS include routine activities and actions regarding to consistent condom use, steady sexual partners, and regular HIV testing and counselling.

Consistent Condoms Use: means condoms were used consistently and refers the frequency of condom use during sexual intercourse (always, sometime, never) in this study. In order to determine the consistent condom use, "Always" was coded as using condom consistently and other two were coded as not using condom consistently.

Steady sexual partner: means a partner someone has sex with, and are committed to, for example spouse, live-in sex partner, or boyfriend.

Regular HIV testing and counselling: refers respondents regularly seeking HIV testing and counselling at a facility that offers such services.

1.7 Conceptual Framework



CHAPTER II
LITERATURE REVIEW

2.1 Global Situation of HIV/AIDS

Globally, there were approximately 36.7 million people living with HIV, and 1.0 million people have died of HIV/AIDS in the year of 2016. According to WHO, there were an estimated 0.8% of adults aged 15–49 years with HIV, though the epidemic varies widely among countries. Majority of people living with HIV are in low-and-middle income countries. Among them, the WHO African Region is the most affected region and accounts for two thirds of the global total of new HIV infections in 2016 (1). In the developed world, the HIV prevalence is much lower but high risk groups such as men who have sex with men, injecting drug users and sex workers remains high (20).

In 2016, 1.8 million people worldwide became newly infected with HIV - about 5,000 new infections per day. However, the new infections are decreasing by 16% between 2010 and 2016, which means declines in new infections remain too slow. Currently, only 60% or 70% of people with HIV know their status, and 40% (over 14 million people) still need to access HIV testing services. As of July 2017, 20.9 million people living with HIV were receiving antiretroviral therapy (ART) globally, however, only 53% of the 36.7 million people living with HIV in 2016 were receiving ART (3). Despite recent advances in access to antiretroviral therapy and HIV health care services, many people with HIV or at risk for HIV still need to access HIV health care services.

While HIV incidence is decreasing in most of the world, incidence among key populations_ men who have sex with men, people who inject drugs, sex workers and their clients, and transgender people continues to be high. Legal and social issues make them increase vulnerability to HIV and poor access to HIV/AIDS health services. In 2015, approximately 44% of new infections occurred among these key populations. Globally, MSM accounted for 12% of new infections in 2015, while sex workers and people who inject drugs accounted for 5% and 8% of new infections, respectively. Furthermore, HIV prevalence in key populations is substantially higher than that in

general population, underling the importance of reaching them with HIV health services (21).

Globally, men who have sex with men are 24 times more likely to acquire HIV than the general population. HIV incidence among these key population is increasing in many parts of the world (7). The odds of having HIV infection are consistently higher among MSM than among the general population of adults in Asia, Africa, and the Americas. In Asia, MSM are 18.7 times more likely to be infected with HIV in compared to the general adult population (22). Double HIV prevalence among MSM was found in cities of China, Taiwan, India, Myanmar and Thailand. The data on HIV incidence, although scare, confirm the ongoing transmission of HIV among MSM (23). In Hong Kong, MSM constituted about 64.0% of all reported HIV cases (725) in 2015 (24). Statistics provided by the Taiwan Centers for Disease Control show that of all new HIV infections reported in 2008 (1609), 64.3% were in MSM. In India, the average national HIV prevalence among MSM in 2007 was 7.4% (25). In Thailand, increasing HIV prevalence has been reported among MSM in Bangkok, from 17.3% in 2003 to 30.8% in 2007 (26), while sentinel surveillance in Myanmar found 23.5% of MSM in Yangon and 35.0% of MSM in Mandalay were HIV infected in 2007 (27). According to UNAIDS data 2017, HIV prevalence among MSM in 2015 was 9.15% in Thailand while the prevalence among MSM in Myanmar was 6.4% (21).

2.2 HIV/AIDS situation in Myanmar

HIV epidemic in Myanmar ranks among the most severe in the Asia and Pacific region and shares similar key populations of people most affected by HIV. After Thailand and Cambodia, Myanmar is the 3rd highest HIV prevalence among 10 Asian countries (28). Since the first individual infected by HIV was identified in Myanmar in 1988 and the first AIDS case was reported in 1991, the HIV epidemic has remained concentrated in specific key populations (KPs): people who inject drugs (PWID), female sex workers (FSW) and their clients, men who have sex with men (MSM) and transgender persons (TG) (29). In 2016, there were estimated 230000 people living with HIV, about 11000 people newly infected (approximately 30 infections per day), and around 7800 AIDS related deaths occurred, confirming the need to strengthen HIV

response. Between 2000 and 2016, the number of AIDS-related deaths has fallen by an estimated 52% as a result of ART coverage in Myanmar (3).

Although HIV prevalence among adults aged 15 and above declined between 2003 and 2011, the trends have not changed much since 2011. It was estimated at 0.54% in 2014 and is expected to decline to 0.44% by 2021 (30). Although there have been major achievements through implementation of prevention and treatment programmes, annual HIV Sentinel Sero-Surveillance (HSS)data show that HIV prevalence among key populations including People who inject drugs (PWID), Men who have sex with men (MSM) and Female Sex workers (FSW)) is on the rise (31). The epidemic in these populations is driven primarily through unprotected sexual contact and the use of contaminated needles and syringes (5).

In Myanmar, HIV prevalence in the general population aged 15 years and 49 years is estimated to be 0.8%, which is stabilizing. However, the most recent surveillance data from 2016 indicate HIV prevalence among people who inject drug (PWID) 26.3%, among men who have sex with men (MSM) 6.4%, and among female sex workers (FSW) 5.4% (3). In the most-at risk groups, the prevalence among MSM has increased in recent years, including younger cohorts under age 25. There is heightened concern that unless targeted actions are taken, the further spread of HIV among MSM in Myanmar is inevitable (15).

2.3 HIV/AIDS and MSM in Myanmar

In Myanmar, men who have sex with men have been recognized as a key population at increased risk of HIV since the earliest days of the HIV response. Despite concerted efforts between government agencies, international and local non-government organisations (NGOs), community-based organisations (CBOs) and development partners to respond to the HIV epidemic among MSM, HIV prevalence among these populations remained considerably high at 6.6% in 2014 (31) and 6.4% in 2016 (3). Published data have also shown that young MSM are highly vulnerable to HIV than that among older MSM (32). The limited availability of and accessibility to sexual and reproductive health services for young people are other key determinants for the vulnerability of MSM to HIV. One internet survey explored that 32% of MSM

reported having condom-less anal sex with someone of the opposite HIV status, therefore risking HIV transmission or being exposed to HIV (33).

Studies in Western countries have found out risk factors for HIV infection among MSM population. The results have shown that multiple male sex partners, events of unprotected anal sex, drug use, and sex with drinking alcohol are associated with HIV infection (34). Social stigma, discrimination and criminalization lead young MSM to experience psychological distress such as low self-esteem, social phobia and risk-taking behaviours including having multiple partners, unprotected sex, and drug use (5). They also make MSM reluctant to attend HIV services and remain hidden population from HIV intervention programs (35).

According to UNAIDS, there were an estimated 252 000 MSM living in Myanmar in 2016. The average national HIV prevalence among MSM was 11.6% but it varies in cities/regions, ranging from 6% in Pyay to 27% in Yangon (36) . The number of MSM newly infected with HIV continues to increase, particularly in young MSM, with a rate five times higher than that of their counterparts in the general population (30). The study shows that sexual risk behaviours among MSM in Myanmar are similar in magnitude and practices to MSM in high-income countries (37). Although national and international collaborative efforts on HIV prevention interventions among key populations, access to HIV testing and prevention services is still a challenge for MSM, particularly for young MSM, due to the criminalization, poor access to social, health and education services (38).

2.4 NGOs for HIV/AIDS health care services in Myanmar

In Myanmar, a number of non-governmental organizations have been working on HIV/AIDS, along with government, private sector, and community partners including networks of people with HIV and vulnerable populations, to reach the vast majority of people in need of HIV/AIDS health care services. Most of the essential HIV services delivered by NGO are peer education work for high-risk groups, community based prevention, care and support activities, anti-retroviral treatment, treatment of sexually transmitted infections, and targeted condom promotion (30).

Apart from Government hospitals, there are 19 non-governmental organizations in Yangon implementing HIV/AIDS treatment, care and support projects for general and key populations. Among them, only a few organizations (eight organizations) provide HIV care, treatment, and support particularly for the MSM populations in Myanmar (Myanmar Information Management Unit, 2017).

Medecins du Monde (MdM), known as Doctors of the World, is one of the non-governmental organizations implementing HIV/AIDS care services for the most at risk population: men who have sex with men, sex workers, and drug users, in Yangon and Kachin State since 1994. MdM is based in France and its regional office is located in Yangon, Myanmar. The organization is helping both HIV positive and negative risk populations to protect their rights and their needs. These populations are supported medically, psychologically, and socially in four clinics, but also through outreach work in the field. MdM ensures a genuine presence at the local level and emphasizes field work and collaborate with country health representatives to increase access to HIV prevention, care, and support services for MSM, FSW, and IDUs in Myanmar (39).

In Northern part of the country, Kachin state, working with people who use drugs, MdM provides distribution of prevention material (condoms, sterile needles), screening test for HIV, Tuberculosis and Hepatitis, educational workshops on health and antiretroviral treatment. In collaboration with a team of health professionals and peer educators, MdM conducts prevention and awareness raising activities and provides substitution treatment by methadone (39).

For MSM populations in Yangon, MdM launched the first HIV/AIDS medical care centre in 2002. All services and products are free of charge and available to every MSM that visit the organization. Services are provided to both HIV negative and HIV positive MSM. The Health care services provided are Rapid HIV blood testing, Anti-retroviral Therapy, Diagnosis and Treatment of Sexually Transmitted Infection, Counselling (pre- test and post-test) for HIV testing, Anti-Retroviral Treatment (ART), STI testing, and general medical consultations, distribution of condom and gel, Diagnosis and Treatment of Tuberculosis, and referral to Public clinics and hospitals. There are full time nursing staff, counsellor, clinical administrators, clinical assistants, doctors, peer educators, and outreach workers. The medical centre serves as both clinic and community centre for MSM population, offering much-needed safe spaces for

them. It also offer education sessions on HIV/STI and nutrition. It has a unique events calendar, with activities that support its local community, such as entertainment, social activities, activities to build self-esteem, and legal advice. MdM also works with other local organizations and peer support groups to offer nutrition activities and income generating activities for MSM (39).

Since Penal Code, Section 377, which implicitly prohibits homosexual behaviour throughout Myanmar, create an environment that discouraged MSM and TG from accessing available services, MdM is conducting advocacy to decriminalize and abolish the law to punish them. They intend to influence institutions to reform national laws and regulations that criminalize and punish the practices and ways of life of these people. It also works closely with the Ministry of Health and Sports to support its decentralization policy and the national plan to combat HIV for this population (11).

2.5 Health and social consequences of HIV/AIDS among MSM

Many men who have sex with men (MSM) experience a disproportionately high level of health and social consequences of HIV/AIDS, despite the growing availability of effective HIV and other health services. Homophobic stigma, discrimination, social exclusion, violence, and criminalization based on sexual orientation drives them to hide their identity and sexual orientation. As many fears negative reactions from health care workers, MSM undergo lower access to HIV and other health services (10). In addition, social isolation and disconnectedness from health systems make them face with depression, and difficult to cope with adherence to medication (40).

Stigmatization on HIV positive is an additional burden: a research found that young MSM living with HIV experienced high level of stigma, which were more likely to engage in unsafe sex (41). There are also at higher risk of depression, substance use and increased suicide rate (10). Among people living with HIV, mental problems have been associated with increased level of HIV transmission (42), hospitalizations (43), virological failure (42), and death rate (44). In addition, psychological issues such as worry, loneliness, and fear of rejection affect the self-perception and sense of worth of young MSM and can lead to self-stigmatization_ feelings of depression, low self-esteem and anger, or self-harming acts (45).

There are several reports of health and social consequences of the disease among MSM in different countries. In China, several cases reported that health service providers discriminated against MSM during their service utilization (46). One study showed that 58.4% of the 326 MSM participants believed that the public discriminated against MSM (47). Furthermore, MSM who are tested HIV positive faced double discrimination, against his MSM status as well his new HIV positive status (48). In Thailand, it has been suggested that the pervasiveness of HIV stigma is compounded by the marginalization of groups at high risk of HV such as MSM (49). Research on people living with HIV described that stigma can prevent from disclosure of one's status and is associated with depression, and substance use (50-52). The study in Thai nurses revealed that majority of the respondents did not view themselves as having stigmatizing beliefs although expressing negative towards PLWHA (53). In the Philippines, MSM reported higher rates of exclusion from religious activities (16.2% to 7%), family activities (13.5% to 9.3%), and of verbal harassment (35.1% to 23.3%), as compared with non-MSM men. Particularly, 48.6% of Filipino MSM with HIV reported suicidal feelings because of their HIV status, a percentage more than 30% higher than the next highest gender group (women at 36.7%) (54). Overall, in the Vietnam study, MSM reported the highest levels of social stigma and self-stigma of any group of people living with HIV (55).

In Myanmar, the research revealed that 18.9% of the 585 participants reported being stigmatized because of their sexual orientation, and 11.9% had been a victim of sexual abuse in the past 12 months (56). A survey of Myanmar MSM also shows that out of 400 young MSM in Yangon and Monywa, 60% and 53% respectively, reported experiencing discrimination as insults and beating in public places because of their same sex attraction. The highest percentage of young MSM in Yangon reported that "exclusion from social occasion' was perceived as the worst discrimination (40% vs. 15%, p=0.01) and the highest percentage of YMSM in Monywa reported 'beating' as the worst discrimination (47% vs.27%, p=0.42). Over 40% of young MSM in both townships reported having problems with family members because of their same-sex preferences (5).

2.6 Social affecting preventive practices on HIV/AIDS

Men who have sex with men experience stigmatization, and discrimination based on their sexual behavior, and their HIV status which negatively impact HIV preventive practices in these men. Due to criminalization of same-sex sexual relations in some countries, MSM are unaware of their risk of HIV, away from HIV services, afraid of receiving HIV testing, and find it difficult to use condoms and lubricants which leads to take high risk sexual behaviours (11). Studies have revealed that there is an association between HIV-related stigma and low level of counselling and testing, low level of knowledge on transmission and high level of reluctance to disclose HIV status and test results (57). With a fear of negative social consequences, stigma and discrimination associated with a positive test result, many MSM avoid taking HIV tests or seeking health care services.

In a range of survey, a study in China shows that discrimination towards MSM was strongly associated with willingness to take up HIV testing in the next six months (AOR = 0.60, 95% CI:0.36-0.98) (47). A meta-analysis also reported that just 47% and 38% of Chinese MSM received HIV testing and counseling in their lifetime and in the past 12 months, respectively, due to social barriers (58). 61.7% of 323respondents from the study in Swaziland reported fear of seeking healthcare was significantly associated with having experienced discrimination (OR-2.2), having ever been raped (OR-7.3), having difficult to insist on condom use when a male partner does not want to use a condom (OR-2.8), and having been denied healthcare (OR-8.3) (59).A research in Chiang Mai also revealed that HIV-related stigma (β=-0.328,$p<0.001$), as well as its subscales_ personalized experience, disclosure, negative self-image, and public attitudes were negatively associated with HIV treatment adherence (60). In Philippines, MSM living with HIV were more likely to report that they avoided going to the hospital (27%) or clinic (37.8%) when they needed care than non-MSM (54).

In Myanmar, access to HIV testing and prevention services remains a challenge for young MSM due to high stigma, discrimination, social exclusion, the criminalization, poor social, health and education services (61). A recent study found that HIV testing among MSM aged 18 to 24 years remains very low for MSM population. The results show that (60.6%)of young MSM had ever tested for HIV in

their lifetime and (50.1%) had their latest test in the past 6 months. 54% had accessed non-HIV health-related services and 47.2% had contact with a peer educator at least once in the past 12 months (56).

2.7 Socio-demographic characteristics and preventive practices of HIV/AIDS

2.7.1 Age

Many studies have shown that young age was associated with never being tested for HIV (62-64). Study in Nigeria reported that as age increases, respondents are more likely to take HIV testing and counselling (AOR=2.9, 95% CI)(64). With a fear of discrimination and legal consequences, young MSM are hesitant to receive HIV testing and counselling, and sexual and reproductive health services. Therefore, they become hidden from support and health services (35). The evidence described that young MSM (<25 years old) were less tested for HIV compared to their peers of older age (65). One survey in Myanmar show that 92% of the young MSM aged (16-26) in Yangon were ever tested for HIV, and one-third of them had their first sexual experience at or before 15 years of age, of which over 80% did so with a male partner (5). The proportion of young MSM aged 18-24 in Myanmar who have ever tested for HIV is higher than that of the overall MSM population in Myanmar who have tested for HIV and know their results as reported from IBBS survey in 2015 (49.6%) (36).

Moreover, MSM aged 18-24 were more likely to use condom-less anal sex than those who were 25-29years old (66). The probability of not using a condom at last anal sex was significantly ($p<0.05$) higher when the male partner was 19 years old or younger, among the younger age group (18-24 years) and among the older age group (35 years and over) (67).

2.7.2 Marital Status

Marital status has an effect on the HIV prevention in many countries and the rate of condom use in spouses and heterosexual partners is very low (68-70). Condom use is low in sexual intercourse between MSM and their female partners, which is consistent with the estimates at the national level in China (71). In China, 33.6% of the 896 MSM respondents had ever been married, and they were less likely to be exposed to preventive information. Among them, 71.9% of the respondents has inconsistent

condom use. Those without condom use with male partners were also more likely not to use condoms with their female partners. Those who received voluntary counseling and testing services were more likely to use condoms in the last episode of sex with their female partners (multivariate odds ratio _ 1.66) (72).

2.7.3 Educational level

A study by Li, R., et al., 2016 (65) in China revealed that educational level was one of the associated factors of prior HIV testing. They found out that higher educational levels were statistically associated with prior HIV testing (OR= 2.02, 95% CI); the higher the educational level, the higher the rate of prior HIV testing among MSM. MSM with high educational level were more likely to have an HIV test because they perceived that they were at a higher risk for HIV infection. In addition, lower educational level was significantly and independently associated with inconsistent condom use (66). The results were also similar to the study in Ho Chi Minh City, Vietnam. Out of 399 participants who had low educational (OR = 2.74, $p < 0.05$) and medium educational levels (OR = 2.68, $p < 0.05$) are more likely to have higher risk of HIV infection because of their sexual risk behaviours (73). In addition, one study in Swaziland found that having completed secondary education or more was significantly associated with disclosure of same-sex practices to a healthcare provider (59).

2.7.4 Occupation

Chow, E. P., et al. (2015) (74) studied in Changsha city of Hunan province, China focused on exploring the preventive practices for HIV/AIDS among MSM and other factors influencing on preventive practices. Of 642 MSM, more than half (61.1%) were currently employed and 36.8% are unemployed. This study revealed that occupational status was not significantly associated with unprotected anal intercourse at last sexual episode. (p value > 0.05). In contrast, young MSM living in Bangkok and Chiang Mai who were currently employed had higher odds of having been tested for HIV in the past 12 months. Being employed was significantly associated with HIV testing in Bangkok and Chiang Mai (75). HIV screening before employment contribute to the increased odds of being tested among young MSM, which is similar to the results from another study among adult MSM (76).

A study in Myanmar also show that occupational status was significantly associated with condom use. Out of 309 respondents, a high percentage of the participants (55.7%) worked at Nat-Kadaw (Spirit Medium) and in fashion sectors, 26.5% were waiters, carpenters, shopkeeper, dish washer and painters, and 17.8% were jobless. The result revealed that the condom use was decreased in occupation (worker in the fashion sector and spirit medium) in compared to Jobless (77). In addition, a study in Cambodia show that the occupation is associated with HIV testing in the past six months among MSM respondents. The percentage of HIV testing was high (29%) in respondents who own business, and (25.4%) in students, followed by laborers (18.2%), and other jobs such as working as hairdresser, a barber, or in a beauty salon shop (27.1%) (78).

2.7.5 Monthly income

A research done in Africa show that monthly income level was related to the level of HIV testing at $p < 0.10$. The study revealed that out of three hundred MSM, 67.7% of the participants had ever been tested for HIV. Among those who had tested for HIV, 65.2% MSM have low income and 69.8% of MSM have high income. The results also show that having tested HIV multiple times was negatively associated with lower income (AOR = 0.33, 95% CI: 0.12–0.87) (79).

2.7.6 Living condition

One survey in Myanmar revealed that living situation was statistically significantly associated with condom use at last sex. Young MSM who live with friends, at a hostel, or at work had three times higher odds of using a condom at last sex compared to young MSM who live with their parents ($p < 0.05$) (5). In Bangkok, those living with their family retained lower odds of having been tested for HIV (OR= 0.2, CI 0.03- 0.7, $p<0.1$). Moreover, living in a township was negatively associated with being tested for HIV (adjusted OR = 0.29, 95% CI: 0.15–0.57) in Africa (79).

2.7.7 Characteristics of MSM population in Myanmar culture

In Myanmar, the accurate data and information on MSM population is limited which make it difficult to carry out relevant HIV prevention and awareness campaigns.

MSM often do not disclose their same-sex behaviour to family and friends, and do not access HIV services for fear of stigma, discrimination and persecution. The characteristics of MSM are mostly hidden. There are three classifications identified in Myanmar culture: “Apone” (Musculine MSM) who are mostly “receptive” and more likely to have relationships with females and to have families, “Apwint” (feminine MSM) who are exclusively receptive and mostly called “ah-chauk ma”, and “Tha-Nge” (Bisexual MSM) who are exclusively “insertive” and masculine outward appearance. The “Tha Nge” are young men having causal same sex sexual activities alongside with /or prior to heterosexual sex and do not recognize themselves as men having sex with men and even less so as gay (11).

2.7.8 HIV and STI prevalence in MSM population

Although an overall decline in HIV prevalence in many geographic regions, HIV prevalence among MSM is on the rise. It was documented a resurgence of HIV infection in MSM during a period of increasing anti-retroviral therapy (ART) (80). In Asia, it was particularly high and rising HIV prevalence noted for Thailand and China (80, 81). One study in Brazil also show that HIV prevalence was 15.4 % of the respondents, with only 45.8 % previously aware of their infection (82). In Thailand, HIV prevalence was significantly increase in MSM who had ‘‘ever’ ’engaged in transactional sex and those who had engaged in transaction sex in the previous 12 months (83). It was also significantly associated with increased odds of HIV infection in studies from Vietnam (84), and China (85).

In addition, there is a high incidence rates of HIV and syphilis in the Shenyang MSM community in China. The study results indicate that syphilis incidence (38.5/100 PY) and prevalence (25.4% and 31.1% at baseline and follow-up, respectively) are alarmingly high within this population of Shenyang MSM (86). Syphilis has significant implications for HIV risk. Syphilis not only indicates sexual risk behaviors, but also may act as a cofactor for HIV seroconversion and those who are syphilis positive are therefore more likely to contract HIV.

2.8 History of Sexual activities

In Tanzania, the mean age at first sex was 12.2 years (87). More than three fifths of the participants had anal sex, and only 14.7% of the participants used condom during the first sexual experience. In Myanmar, MSM had their first sexual experience at or before 15 years of age, of which over 80% did so with a male partner. Condom used during their first sexual experience was 67% (5). In Thailand, age at sexual debut was 18 years (88). In terms of consistent condom use, one study in Thailand shows that 45% of those with steady partners and 21% of those with casual partners did not use condom consistently. More than a third (37%) of the respondents had unprotected sex with a male partner in the last three-month (66). In addition, unprotected sexual intercourse was significantly associated with HIV testing among MSM (74-76).

In Korea, the study shows that sex with female sex partners, number of males' sex partners, and paid for sex were significantly associated with more condom use at recent anal sex. In the study, many of the MSM respondents were bisexually active, and 23.3% of those had female sex partners (FSP) in the past 12 months. 51% of respondents had unprotected sex at last sex with a FSP and they had multiple FSPs, while 66.7% of respondents used condoms at recent anal sex with male sex partners (MSPs). It also shows that a high proportion of those sex with MSP(s) having two or more sexual partners in the past 6 months, and 16.1% had anal sex with more than six male partners. Only 7.4% reported that they had paid for sex in the past 6 months (89). Exchange of money is common among many MSM who would not characterize themselves as sex workers (90). In addition, having a steady partner (OR= 0.53, $p<0.0001$) was also positively associated with more frequent condom use. A cross sectional survey among men who have sex with men (MSM) in Togo also revealed that one out of five MSM did not use a condom during the last anal encounter with another man (91).

2.9 Knowledge and attitudes affecting preventive practices of HIV/AIDS

HIV prevention and transmission is well understood among MSM. Most MSM know about HIV prevention practices and tools (condoms and non-oil based lubricants), but still do not use them consistently (10). They know how to use condoms but are less aware of the importance of lubricants. MSM often have sex with females as well, and condom use depends on the partner (26). The study of Lau JT et al,. 2004 (72) showed that only 44.1% of MSM used condoms during the last anal sex as they believed that their partners were free form HIV/AIDS (31.6%) and no need for safer sex. In addition, inadequate HIV knowledge was negatively associated with having ever been tested for HIV (AOR = 0.90, 95% CI: 0.80–1.00) (79) and it was strongly related to not using a condom among MSM (67).

There are many studies on preventive practices of HIV/AIDS among MSM in different countries. A study in northeast China revealed that majority of MSM students have a good knowledge on HIV/AIDS transmission and prevention. About 90% knew the correct answers to HIV prevention questions, but high numbers of participants failed to use condoms with steady and casual male partners, approximately one-third (n=146, 33.5%) had ever had an HIV test, putting them at high risk for HIV infection and transmission (92). The study of Lau, J. T., et al., 2008 (72) in China also found out that the majority (86.6%) of the respondents answered the questions on HIV knowledge correctly, but 30% still gave some wrong responses.

In Cambodia, attitudes and knowledge towards HIV testing among MSM were good but were not associated with recent HIV testing. They expressed positive attitudes towards HIV testing. 95.6 % agreed that HIV testing helps people feel better and only 30.7 % did not want to know if they have HIV. Similarly, the majority of MSM in this study were good knowledge on HIV/AIDS. However, a large knowledge gap was noted in a question regarding if a person must have many different partners to get HIV (78). However, in Thailand, 21% knew effective HIV treatments (*n*=194), among whom 44% believed HIV was less serious and 36% said their risk behavior had increased after hearing about the treatments (66). Moreover, the negative implications of HIV stigma extend to prevention efforts in Thailand as well. The Pre-exposure Prophylaxis (PrEP) Initiative study of HIV-negative MSM in Chiang Mai, Thailand revealed that

participants held positive attitudes toward PrEP, but expressed concerns that taking the regimen could arouse outside suspicions that they are HIV-positive or have sex with other men (93). It impacts the PrEP usage among HIV-negative MSM.

They were also aware of the beneficial effect of ART on HIV prevention and transmission among MSM. MSM living with HIV were more likely to perform unprotected anal intercourse than MSM without HIV, but when they did, it was commonly acted with other HIV-concordant sexual partner/s. HIV-infected MSM were more likely to meet their sexual partners in saunas, clubs or through introduction by friends than HIV-uninfected respondents (94).

Chapter III
Research Methodology

3.1 Research design

A quantitative cross-sectional study design was used to identify knowledge, attitude, and preventive practices concerning HIV/AIDS among men who have sex with men in Medecins du Monde organization, Yangon, Myanmar.

3.2 Study area

This study was conducted in Medecins du Monde organizaton, Yangon, Myanmar.

Figure 1: Figure Showing Map of Myanmar and where Yangon is located

3.3 Study population

The study population was MSM who came and used for health care services in Medecins du Monde organization, Yangon, Myanmar.

3.4 Sampling technique

Multistage sampling technique used for sampling of this study.

1st stage: One province (Yangon) was selected from 14 provinces by purposive sampling, as it is the country's largest city and highest population density in Myanmar.

2nd stage: One NGOs that provide HIV/AIDS treatment, care and support (Medecins du Monde) from 8 organizations in Yangon was selected by purposive sampling as Medecins du Monde is one of the organizations to implement HIV/AIDS project for MSM. This organization has been supporting HIV/AIDS services for MSM for many years not only with clinic services such as treatment and counseling but also social services like gathering, hospital support, nutrition support and caregiver workshop for their caregiver.

3rd stage: All participants were selected by using mixed method with convenience sampling and snowball sampling from MSM who attended and used health services in Medecins du Monde organization during the study period, as the study populations were hard to reach group. The monthly patient attendance to the clinic was around 450. During the data collection period, the respondents was recruited in clinic opening hours. The data was collected from all MSM who used the clinic health services and came to the clinic, and who were fit into the selection criteria and willing to participate during the data collection time.

Sampling Process

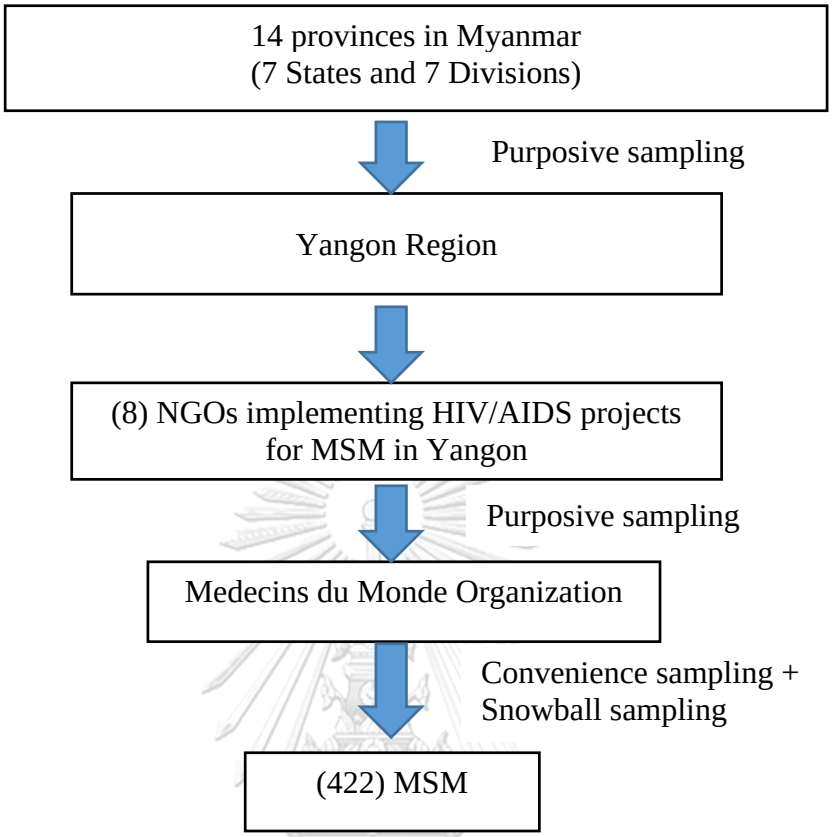


Figure 2: Figure Showing Sampling Process for Data Collection

3.5 Sampling and Sample size

Cochran formula was used to calculate the sample size for this study.

n = desired number of sample size

z = the reliability coefficient at the 95% CI = (1.96)

p = the population proportion of MSM having good practice level in Yangon (assumed to be 0.5)

d = expected error at 5% = 0.05

$n = Z^2 P (1-P)/ (d)^2$

$= 1.96^2 \times 0.5 (1-0.5)/0.05^2$

= 384

The calculated sample size was 422 (384+ 10% of expected refusals data)

3.5.1 Inclusion Criteria

1. MSM with or without HIV who was aged (18) years and above.
2. MSM who used the service of the organization, and who were willing to participate.
3. MSM who can read and write Myanmar language very well.

3.5.2 Exclusion criteria

1. MSM who were physically and mentally ill.
2. MSM who did not understand Myanmar language.
3. MSM who had tuberculosis infection.

3.6 Measurement tools

The measurement tool was a self-report Questionnaire.

Questionnaires was developed by modifying the questions based on **the World Health Organization (WHO) bio-behavioural survey guidelines for populations at risk for HIV 2017, (World Health Organization 2017) (95), Carey, M.P, & Schroder, K.E.E. 2002 (96), and Carey, M.P., Morrison – Beedy, D., & Johnson, B.T. (1997)** (97). The questionnaire was prepared in English, translated into Myanmar language and was validated by a MSM expert, a medical doctor with great knowledge and experience on HIV/AIDS prevention among MSM populations, who was a Myanmar national and fluent in both English and Myanmar language. Then back translation was done from Myanmar to English language.

The Questionnaires was comprised of five parts,

I. Socio-demographic characteristics
II. History of sexual activities
III. Knowledge on HIV/AIDS
IV. Attitude on HIV/AIDS
V. Preventive practices of HIV/AIDS

I. Socio-demographic characteristics

This part of the questionnaire was composed of questions on the socio-demographic which included age, marital status, educational level, occupation, monthly income, living condition, and current HIV/STI status of MSM sample population in Yangon, Myanmar.

II. History of sexual activities

This part of the questionnaire was composed of questions on the history of sexual activities in MSM participants in Yangon, Myanmar.

III. Knowledge on HIV/AIDS

This part of questionnaire designed to find out what extent the sample population had correct knowledge on HIV/AIDS basic information, prevention, and transmission.

There were 27 items (Q1 – Q27) in this part. A correct answer was given 1 score and 0 score for wrong answer, and do not know. The score varied from 0-27 points.

Bloom's cut off point (Bloom, 1968) was used to divide Knowledge into three levels; (1) low level of knowledge (<60%); (2) moderate level of knowledge (60 – 80%); and (3) high level of knowledge (>80%).

Level of knowledge	Cut off point	Scores
Low	<60%	0 -15
Moderate	60% - 80%	16 – 22
High	>80%	23-27

IV. Attitude towards HIV/AIDS

There were 20 items (Q1. – Q20) in this section.

This part of question aimed to determine attitudes of the sample population toward HIV/AIDS by using Likert Scale. The answer was categorized as strongly agree,

agree, unsure, disagree and strongly disagree. The rating scale was measured as follows;

Positive Statements		Negative Statements	
Choice	**Score**	**Choice**	**Score**
Strongly Agree	5	Strongly Agree	1
Agree	4	Agree	2
Unsure	3	Unsure	3
Disagree	2	Disagree	4
Strongly Disagree	1	Strongly Disagree	5

Total attitude scores were classified into 3 levels with cut-off point of mean (SD). The standard point for the attitude was mean ± standard deviation. All participant's answer was accounted by standard deviation and mean.

Negative attitude = point ≤ mean – SD (≤ 60 score)

Neutral attitude = mean-SD < point < mean + SD (61 -79 score)

Positive attitude = point ≥ mean + SD (≥ 80 score)

V. Preventive practices on HIV/AIDS

The questions in this section aimed at finding preventive practices of the respondents towards HIV/AIDS. There were 14 questions (Q1 – Q14). The answers were categorized into 'always', 'sometimes' and 'never'. The rating scale was measured as follows.

Good Practice		Bad Practice	
Choice	**Score**	**Choice**	**Score**
Never	1	Never	3
Sometimes	2	Sometimes	2
Always	3	Always	1

Total practice scores were classified into 3 levels with cut-off point of mean (SD). The standard point for the attitude was mean ± standard deviation. All participants' answer was accounted by standard deviation and mean.

Poor practice level = point ≤ mean – SD (≤ 28 score)

Moderate practice level = mean-SD< point< mean + SD (29 – 35 score)

Good practice level = point≥ mean+ SD (≥ 36 score)

3.7 Reliability and Validity Test of the questionnaire

The following activities were carried out to maintain the reliability and validity.

- A set of questionnaire was developed and revised according to the literature review and recommendation from three experts. The content validity of the overall questionnaire was calculated from the scores given by three experts; Dr. Montakarn Chuemchit (Ph.D, Speciality with Gender and Sexuality), Dr. Ratana Somrongthong (Ph.D, Speciality with Adolescent and Reproductive Health), and Dr. Nipunporn Voramongkol (RH Consultant) and it came out as 0.95.
- For internal consistency of the questionnaires, the questionnaires was pretested in 30 MSM with the age of 18 years and above from Aye Nyein Myitta Organization to access the participants' understanding on the questions. Aye Nyein Myitta Organization is a non-government organization, operating HIV/AIDS projects for MSM population in Yangon. It is also a similar organization to Medecins du Monde organization, Yangon.
- For reliability of the questionnaires, the coefficient for reliability (Cronbach's alpha) was tested among 30 MSM from Aye Nyein Myitta Organization. Cronbach's alpha result with cutoff point of ≥ 0.70 was used to estimate the internal consistency of attitude and preventive practices questions. The results from Cronbach's alpha for pre-test showed 0.823 for 20 attitude questions, and 0.734 for preventive practices questions. For reliability of the questionnaires, Kuder-RichardsonFormula 20, or KR-20 was used, and the result showed 0.826 for 27 knowledge questions.

3.8 Data collection

The data collection used self-administered questionnaires from total 422 target respondents in Medecin du Monde Organization, Yangon.

Before conducting the survey, the researcher requested an approval from the organization. After getting approval, the research proceeded the process with the help of the experienced MSM team leaders. The original questionnaires were prepared in English and translation of Myanmar language was conducted before data collection to facilitate easy understanding of the participants. The developed questionnaire was revised and corrected according to the recommendation from 3 experts. The questions which were difficult to understand for the participants was changed and paraphrased using simple words.

Data collection was conducted by principal researcher and three research assistants. Three MSM leaders who already had experience with HIV projects for MSM, and who were working as research assistants for HIV projects at international non-government organizations were recruited for this study. Principal researcher trained the assistants one day before data collection and explained about study objectives, research design, details about questionnaires and ethics concerns. To understand clearly about the research, the documents such as research objectives, designs, papers for ethic approval, and questionnaires were given to the research assistants. After knowing the research clearly, the principal researcher and the research assistants distributed the self-administered questionnaires in person to all respondents who came to the clinic, who fit into the selection criteria and willing to participate in the survey during the data collection time. It only took 10-15 minutes to answer the questions. Data collection was processed between April and May, 2018. To keep the respondents' privacy, the researcher already asked the organization to give a meeting room as a private room for the MSM who answered the self-administered questionnaires during the data collection period.

Before data collection, the researcher and research assistants explained the participants about consent form, anonymity, freedom to participation, right to withdraw, confidentiality, access to final report and no use the data for other purposes. For the privacy, participants were explained that the self-administered questionnaire

were only seen by the researcher, and all the information given by the respondents were kept confidential. Each participants was also informed that their contribution will be an asset in determining the factors related to knowledge, attitude and preventive practices towards HIV/AIDS which will help the policy makers and concerned authorities to take appropriate measure for a MSM population.

After explaining the process, the participants who agreed to participate had to sign on the written consent form. The participant was informed that the written consent form which included participant's sign was kept confidentially and separately from the questionnaires, and it would not be traced back the answer. The self-administered questionnaire was answered by themselves, and the researcher kept their answer-papers confidentially. All questionnaires and data were destroyed after the thesis had finished.

3.9 Data analysis

After data collection, all data were entered, cleaned, coded, and scored. All of data entry were performed and analyzed by using SPSS version 22.0.

Descriptive Statistics

Descriptive statistics such as percentage, mean, standard deviation, median and range were used for analyzing the general characteristics of the respondents as well as knowledge, attitude, and preventive practices on HIV/AIDs.

Inferential Statistics

Bivariate analysis

Pearson's Chi Square test was used to find the associations between:

- socio-demographic characteristics and preventive practices of HIV/AIDS
- knowledge, attitude, and preventive practices of HIV/AIDS

Each of the independent variables was coded into categorical variables for bivariate analysis using Chi-square test. For those variables with frequency less than 5 in more than 20% of cells, Fisher's exact test was used to find the associations.

Multivariate analysis

Binary logistic regression was used for the variables which had $p<0.05$ from the Chi-square test or Fisher's exact test to construct the multivariate analysis model. The variables which had the value of $p<0.2$ in bivariate analysis were selected for multivariate analysis. Multivariate analysis was done to find out the factors associated with preventive practices of HIV/AIDS to find the association between socio-demographic characteristics, knowledge on HIV/AIDS, and attitude towards HIV/AIDS with preventive practices on HIV/AIDS. Finally, the results were presented using tables based on finding, then discussion, conclusion and recommendation were given depending on the results.

3.10 Limitation

There was some limitation which influenced the result of this study. The participants of this study may not represent MSM in Yangon because the study population were MSM who using health care services that might have better preventive practices than general population. Due to cultural and social barriers, MSM people in Myanmar were not exposed as the MSM. They may feel shy when answering the questionnaires so that the researcher could not get the whole information from them. The survey asked questions about sensitive topics and participants may not have felt comfortable answering accurately. Some of the findings may be impacted by different understandings between participants and researchers because of terminologies employed in the survey instrument. This included terms related to sexual orientation and behaviours, gender presentation and gender identity, as well as some of the temporal definitions included in the survey. The study was also limited to MSM only in the organization. Therefore, the finding could not generalize the whole MSM in other communities in Myanmar. In addition, there was time limit to conduct this study, so, it was difficult to complete in time and was unable to cover all other cities of Myanmar.

3.11 Ethical Consideration

This proposal was submitted and approved by the ethical committee of Chulalongkorn University. The objective and purpose to this study were explained to the respondents before signing the consent form and voluntary participation. Every received data was treated carefully and confidentially. The respondents can refuse to join this study and no need to explain the reasons. The data were used only in this project and their information were kept secretly.

3.12 Expected Benefit & Application

- The information gathering of the KAP of a MSM population can have an impact on how to advance the mission and improve future interventions of HIV/AIDS programmes.
- The study can be used to create awareness programmes regarding HIV/AIDS prevention among MSM and advocate the concerned authorities.
- It can be used for further literature study.
- It can be used as a baseline by the donor agencies and NGOs working in the field of MSM to work out specific interventions.

3.13 Obstacles and Strategies to solve the problems

Due to stigmatization and discrimination against MSM, these populations were hard to identify and difficult to approach. So the HIV/AIDS treatment, care and support service provider for MSM was chosen as a setting for data collection where MSM with or without HIV could be found. In this study, the deliberate choice of the participants may have selection bias which influenced the results of this study. Recall bias was also a possible threat to the validity of this study, as individuals needed to recollect information from the past 12 months. In order to reduce recall bias, questions were framed in terms of behavior in the last three months, however, this may not be indicative of usual behavior. Since this was a cross- sectional study and therefore temporal associations cannot be inferred. Since there was no enough time to complete the research, planning and preparing the research helped conduct it in time.

CHAPTER IV
Results

Part I: Descriptive Findings

4.1. Socio-demographic Characteristics

Table 1 shows the socio-demographic characteristics of the respondents who came and used for health care services in Medecins du Monde organization, Yangon, Myanmar. The mean age of the respondents was 28 years which range from 18-59 years. The distribution of the proportion shows that the majority of the respondents, 51.4%, were between 25 – 35 years of age, 27.5% were between 20 – 24 years of age, and some of them were in the age group less than 19 years and more than or equal 36 years of age with 9.5 % and 11.6% respectively. Among the respondents, 74.4% were never married, 5.2% were formally married, and 20.4% were living in with a partner but not married. As for the education status, 35.8% were high school education, 34.6% were secondary school education, 23.9% were university graduate, and 5.7% were primary school education. About 34.4% of the respondents worked in the fashion sectors, 23.2% were private/government employee, 15.6% had own business, and 11.6% were NGO/INGO staff. Only a few percent were Natkataw, 7.6%, and other occupations, 7.6%, such as drivers, shopkeepers, painters, male sex workers, spa workers, and students. Half of the respondents (53.3%) had sufficient monthly income, (35.8%) had no sufficient monthly income, and only 10.9% had saving.

As for the current living conditions, about 27.0% of the respondents lived with their friends, 26.5% of the respondents lived almost alone, 24.6% lived with their male partners, 16.6% lived with their parents, and only 5.2% stayed with wife. Among 422 respondents, 32.5% was Apone, 51.2% was Apwint, and 16.4% was Tha Nge kind of MSM. Almost all of the respondents 98.6% had ever tested for HIV, and only a few 1.4% had never tested HIV. Out of 416 respondents who had tested for HIV, 64.2% were HIV negative, 20.9% were undisclosed, and 14.9% were HIV positive. As for the status of sexually transmitted infections, 96.4% of the respondents had ever received a sexually transmitted infection check-up in the last 12 months, and only 3.6% had never received it in the last 12 months. Among the 407 respondents who had received a

sexually transmitted infection check-up in the last 12 months, 56.3% had a sexually transmitted disease and 43.7% had not. Currently, 77.3% of the respondents regularly received HIV/STI-related health care services in Medecins du Monde organization.

Table 1. Respondents by Socio-demographic Characteristics

Socio-demographic Characteristics (n=422)	Number (n)	Percentage (%)
Age (years)		
≤19 years	40	9.5
20 – 24 years	116	27.5
25 – 35 years	217	51.4
≥ 36 years	49	11.6
Mean (±Std. Deviation) = 27.61 (±7.19)		
Median = 26.50		
Minimum – Maximum =18.00 – 59.00		
Marital status		
Never married	314	74.4
Formally married	22	5.2
Live in with a partner but not married	86	20.4
Education		
Primary school	24	5.7
Secondary school	146	34.6
High school	151	35.8
University graduate	101	23.9
Occupation		
Private/Government employee	98	23.2
NGO/INGO staff	49	11.6
Own business	66	15.6
Work in the fashion sector (Hair style, Make-up, Dress designer)	145	34.4
Natkataw (Spirit medium)	32	7.6
Others#	32	7.6

Monthly income		
Sufficient	225	53.3
Not sufficient	151	35.8
Have saving	46	10.9
Current living condition		
Almost living alone	112	26.5
With parents	70	16.6
With wife	22	5.2
With a male partner	104	24.6
With friends	114	27.0
Characteristics of MSM		
Apone (Masculine MSM)	137	32.5
Apwint (Feminine MSM)	216	51.2
Tha Nge (Bisexual MSM)	69	16.4
Ever tested for HIV (n=422)		
Yes	416	98.6
No	6	1.4
HIV test result (n=416)		
HIV positive	62	14.9
HIV negative	267	64.2
Undisclosed	87	20.9
Ever received a sexually transmitted infection check-up in the last 12 months		
Yes	407	96.4
No	15	3.6
Respondents who have been told he had a STD in the last 12 months (n=407)		
Yes	229	56.3
No	178	43.7
Currently, regular receive HIV/STI-related health care services in MdM (n=422)		
Yes	326	77.3
No	96	22.7

4.2 History of Sexual activities

Table 2 shows the history of sexual activities of the respondents. Majority of the respondents, 90% had first sex with male, and only 10% with female. The mean age at first anal sex with a man was 15 years which ranged from 7 – 25 years. More than half of the respondents, 56.9%, were at the age of 15 -19, 27% were between 12 to 14 years of age, only 6.4% were between 7 to 11 years of age, and 9.7% were between 20-25 years of age when they had first anal sex with a man. Only 33.2% of the respondents used condoms at their first anal sex with a man. During first anal sex with a man, 10.2% of the respondents gave presents, and 42.9% of the respondents received presents. 27.3% had a history of having sex with a woman. Out of 422 respondents, 68.7% had steady sexual partners and 87.4% had causal sex partners in the past three months. 87.2% of the respondents had sex with males as steady sexual partners while 94.6% had sex with males as causal sex partners. Most of the respondents, 80.3% had oral sex with steady sexual partners while 85.9% had oral sex with causal sex partners. About 89.3% of the respondents had anal sex with their steady sexual partners. Among the respondents who had sex with causal partners in the past three months, 8.9% of the respondents gave presents to have sex with partners, 36.9% received presents from partners, and 11.4% not only gave but also received presents. However, 42.8% did not give or receive presents to have sex with their causal partners. Out of 422 respondents, 61.8% had sex with a man who gave money in last three months. Among the respondents who had last anal sex with male partners who gave money, more than half, 58.2% used condoms.

Table 2 Respondents by History of Sexual Activities

History of Sexual Activities (n=422)	Number (n)	Percentage (%)
Type of sex partner at first sex with anyone		
Male	380	90
Female	42	10
Age at first anal sex with a man		
7-11	27	6.4
12-14	114	27.0
15-19	240	56.9
20-25	41	9.7

Mean (±Std. Deviation) = 15.44 (±2.91)
Median = 16.00
Minimum – Maximum = 7.00 – 25.00

First anal sex with a man using condom		
Yes	140	33.2
No	282	66.8
Give presents to have first anal sex with a man		
Yes	43	10.2
No	379	89.8
Receive presents to have first anal sex with a man		
Yes	181	42.9
No	241	57.1
Having Sex with women		
Yes	115	27.3
No	307	72.7
Respondents who have steady sexual partner in the past 3 months (n=422)		
Yes	290	68.7
No	132	31.3
Type of steady sexual partner (n=290)		
Male	253	87.2
Female	37	12.8
Oral sex with steady partner (n=290)		
Yes	233	80.3
No	57	19.7
Anal sex with steady partner (n=290)		
Yes	259	89.3
No	31	10.7
Respondents who have casual partner in the past 3 months (n=422)		
Yes	369	87.4
No	53	12.6

Type of casual partner (n=369)		
Male	349	94.6
Female	20	5.4
Oral sex with casual partner (n=369)		
Yes	317	85.9
No	52	14.1
Give or receive presents to have sex with casual partner (n=369)		
Yes, I gave	33	8.9
Yes, I received	136	36.9
Yes, I not only gave but also received	42	11.4
None of the above	158	42.8
Having sex with a man who gave money in the last 3 months (n=422)		
Yes	261	61.8
No	161	38.2
Last anal sex with male partners who gave money using condoms (n=397)		
Yes	231	58.2
No	166	41.8

4.3 Knowledge on HIV/AIDS transmission, prevention and information

Table 3 presents the level of knowledge among 422 respondents. 49.1% of the respondents had high level of knowledge, 41.9% had moderate level of knowledge, and only 9.0% of respondents had low level of knowledge.

Table 4 presents number and percentage distribution of correct knowledge answered by 422 respondents. The general knowledge on HIV/AIDS was in the first eight questions, next nine and eight questions were about knowledge on HIV/AIDS transmission and prevention respectively, and the last two questions were about knowledge on HIV/AIDS information. Results revealed that 85.8% knew HIV/AIDS is a contagious disease. However, 67.8% knew that there is no cure for HIV/AIDS. 81.5% knew that HIV/AIDS does not occurs only among men who have sex with men even though 66.1% believed that a person with HIV can look and feel healthy. 84.4% thought

that people who have been infected with HIV does not show serious signs of being infected quickly, and 65.9% thought that a person can be infected with HIV for 5 years or more without getting AIDS. 74.6% knew that there is no vaccine that can stop adults from getting HIV while 94.1% knew that some drugs have been made for the treatment of HIV/AIDS.

As for the knowledge on HIV/AIDS transmission, 93.6% of the respondents knew that coughing and sneezing do not spread HIV. More than 85% of the respondents knew that HIV cannot be transmitted by mosquitoes (87.4%), by sharing a glass of water with someone who has HIV (96.0%), and through contact with saliva, tears, sweat, or urine (93.4%). Moreover, 69% thought that a person can get HIV by getting an injection from a needle that was already used by someone else, while 56.6% thought that it is possible to get HIV/AIDS by having sex with a healthy looking person. About 95.7% of the respondents believed that it is possible to get HIV from anal sex without condom use even though 62.1% believed that having sex without condom use only once will infect a person with HIV/AIDS. 93.1% of the respondents also knew that HIV/AIDS can be transmitted by transfusion of blood.

For the knowledge on HIV/AIDS prevention, 95.7% of the respondents knew that having sex with more than one partner can increase a person's chance of being infected with HIV. However, only 33.9% believed that they need to use condoms with their steady partners. 98.1% thought that a person can protect himself form HIV by using condom correctly every time they have sex, while 88.9% thought that a person can protect himself from HIV by having one uninfected faithful sex partner. 96.7% knew that the blood test for HIV is a very good way to find out if they have HIV although only 58.8% knew that taking a test for HIV one week after having sex will not tell a person if he has HIV. Moreover, more than 79% of the respondents knew that eating healthy foods and taking vitamins cannot keep a person from getting HIV, with 79.9% and 82.9% respectively. Regarding to knowledge on HIV/AIDS information, nearly all of the respondents knew that there are the organizations that provide free HIV/AIDS related health services for MSM (99.8%), and that a person can get HIV related health information through media, health talk, peer educators, and health staff (96.7%).

Table 3. Respondents by level of knowledge

Level of knowledge (n=422)	Number(n)	Percentage (%)
Low level of knowledge (<60%)	38	9.0%
Moderate level of knowledge (60% - 80%)	177	41.9%
High level of knowledge (>80%)	207	49.1%

Table 4. Respondents by Knowledge on HIV/AIDS, transmission, prevention, and information

Statement (n=422)	Correct answer	
	Number	Percentage
1. HIV/AIDS is a contagious disease.	362	85.8
2. There is a cure for HIV/AIDS.*	286	67.8
3. HIV/AIDS occurs only among MSM.*	344	81.5
4. A person with HIV can look and feel healthy.	279	66.1
5. People who have been infected with HIV quickly show serious signs of being infected.*	356	84.4
6. A person can be infected with HIV for 5 years or more without getting AIDS.	278	65.9
7. There is a vaccine that can stop adults from getting HIV.*	315	74.6
8. Some drugs have been made for the treatment of HIV/AIDS.	397	94.1
9. Coughing and sneezing DO NOT spread HIV.	395	93.6
10. HIV can be spread by mosquitoes.*	369	87.4
11. A person can get HIV by sharing a glass of water with someone who has HIV.*	405	96.0
12. A person can get HIV by getting an injection from a needle that was already used by someone else.	291	69.0
13. It is possible to get HIV/AIDS by having sex with a healthy looking person.	239	56.6

14. A person can get HIV through contact with saliva, tears, sweat, or urine.*	394	93.4
15. It is possible to get HIV from anal sex without condom use.	404	95.7
16. Having sex without condom use only once will not infect a person with HIV/AIDS.*	262	62.1
17. HIV/AIDS can be transmitted by transfusion of blood.	393	93.1
18. Having sex with more than one partner can increase a person's chance of being infected with HIV.	404	95.7
19. There is no need to use condom with a steady partner.*	143	33.9
20. A person can protect himself form HIV by using condom correctly every time they have sex.	414	98.1
21. A person can protect himself from HIV by having one uninfected faithful sex partner.	375	88.9
22. The blood test for HIV is a very good way to find out if you have HIV.	408	96.7
23. Taking a test for HIV one week after having sex will tell a person if he has HIV.*	248	58.8
24. Eating healthy foods can keep a person from getting HIV.*	337	79.9
25. Taking vitamins keeps a person from getting HIV.*	350	82.9
26. There are the organizations that provide free HIV/AIDS related health services for MSM.	421	99.8
27. A person can get HIV related health information through media, health talk, peer educators, and health staff.	408	96.7

*Negative statement

4.4. Attitude towards HIV/AIDS, and Barriers on HIV preventive practices

Table 5 presents the level of attitude among respondents. The mean score of attitude was 70 and standard deviation was 10. The score of attitude was defined as negative when the score was less than or equal to 60 (70-10), as positive when the score was greater than or equal to 80 (70+10), and as neutral when the score was from 61 to 79. According to the frequency and percentage distribution of attitude level, 21.3% of the respondents had negative attitude, 61.8% had neutral attitude, and 16.8% had positive attitude.

Table 6 shows the frequency and percentage distribution of attitude towards HIV/AIDS, and barriers on HIV/AIDS preventive practices among the respondents. The first five questions were about attitude towards HIV/AIDS, and the rest were about attitude towards barriers on HIV/AIDS preventive practices. The results indicated that 54.3% of the respondents agreed that AIDS is a serious health problem among men who have sex with men. Most of the respondents, 95.5% agreed that HIV/AIDS has severe health consequences. Only 47.9% agreed that it is possible that they might get HIV/AIDS, while 36.8% agreed that the risk they will get HIV/AIDS is high. About half of the respondents, 55.4% agreed that they will feel depress when they have HIV.

Regarding attitudes towards barriers on HIV/AIDS preventive practices, 67.3% of the respondents agreed that it is difficult to insist on using condom when a male partner does not want to use condom. Around 57.4% disagreed that it is embarrassing to buy or ask for condoms. More than 75% of the respondents agreed that they are not ashamed to say they are MSM in a gathering with other MSMs, and when they meet with a health care worker who works in their community.

Furthermore, more than 70% of the respondents disagreed that they have ever felt afraid to seek health services because they are worried someone may learn they are MSM, that they have ever avoided going to a health care facility because they are worried the service provider would treat them differently if they found out being MSM, and that they delay to go to a health care facility because they fear disclosure of HIV positive status. 55% of the respondents also disagreed that they feel uncomfortable accessing health services because they are afraid that their family/wife/partner may find

out of being MSM, while 68% disagreed that they feel embarrassed to go and take treatment at the clinic when they have HIV.

In addition, 66.3% disagreed that they have experienced discrimination from other people because of being MSM, 61.1% disagreed that they have ever felt excluded from family activities because of being MSM, and 80.1% disagreed that they have ever felt that they have been rejected by friends. About 46% disagreed that they are afraid of being harassed by someone or arrested by the police for engaging in same sex practices. At the same time, more than 80% of the respondents agreed that health care providers are sympathetic when they share their feelings and problems with them, and that they feel comfortable to come back and continue receiving health services from the current facility.

Table 5. Respondents by level of attitude

Level of attitude (n=422)	Frequency (n)	Percentage (%)
Negative Attitude (≤60 score)	90	21.3%
Neutral Attitude (61 – 79 score)	261	61.8%
Positive Attitude (≥80 score)	71	16.8%

Table 6. Respondents by Attitude towards HIV/AIDS, and Barriers on HIV/AIDS preventive practices

Statement (n=422)	Frequency (Percentage)				
	SA	A	US	D	SD
1. AIDS is a serious health problem among men who have sex with men.	111 (26.3)	118 (28.0)	43 (10.2)	75 (17.8)	75 (17.8)
2. HIV/AIDS has severe health consequences.	150 (35.5)	251 (59.5)	10 (2.4)	10 (2.4)	1 (0.2)
3. It is possible that I might get HIV/AIDS.	57 (13.5)	145 (34.4)	73 (17.3)	96 (22.7)	51 (12.1)

4. The risk that I will get HIV/AIDS is high.	53 (12.6)	102 (24.2)	77 (18.2)	134 (31.8)	56 (13.3)
5. I will feel depress when I have HIV.*	38 (9.0)	196 (46.4)	102 (24.2)	52 (12.3)	34 (8.1)
6. I find it difficult to insist on using condom when a male partner does not want to use condom.*	84 (19.9)	200 (47.4)	24 (5.7)	105 (24.9)	9 (2.1)
7. It is embarrassing to buy or ask for condoms.*	50 (11.8)	115 (27.3)	15 (3.6)	200 (47.4)	42 (10.0)
8. I am not ashamed to say I am MSM in a gathering with other people who are MSM.	90 (21.3)	232 (55.0)	31 (7.3)	46 (10.9)	23 (5.5)
9. I am not ashamed to say I am MSM when I meet with a health care worker who works in my community.	87 (20.6)	247 (58.5)	28 (6.6)	37 (8.8)	23 (5.5)
10. I have ever felt afraid to seek health services because I am worried someone may learn I am MSM.*	19 (4.5)	71 (16.8)	27 (6.4)	217 (51.4)	88 (20.9)
11. I have ever avoided going to a health care facility because I am worried that the service provider would treat me differently if they found out I am MSM.*	17 (4.0)	44 (10.4)	16 (3.8)	242 (57.3)	103 (24.4)
12. I feel uncomfortable accessing health services because I am afraid that my family/wife/partner may find out I am MSM.*	25 (5.9)	132 (31.3)	33 (7.8)	163 (38.6)	69 (16.4)
13. I delay to go to a health care facility because I fear disclosure of HIV positive status.*	22 (5.2)	66 (15.6)	23 (5.5)	233 (55.2)	78 (18.5)
14. I feel embarrassed to go and take treatment at the clinic when I have HIV.*	36 (8.5)	70 (16.6)	29 (6.9)	200 (47.4)	87 (20.6)

15. I have experienced discrimination from other people because I am MSM.*	21 (5.0)	97 (23.0)	24 (5.7)	214 (50.7)	66 (15.6)
16. I have ever felt excluded from family activities because I am MSM.*	18 (4.3)	93 (22.0)	53 (12.6)	185 (43.8)	73 (17.3)
17. I have ever felt that I have been rejected by friends.*	17 (4.0)	53 (12.6)	14 (3.3)	249 (59.0)	89 (21.1)
18. I am afraid of being harassed by someone or arrested by the police for engaging in same sex practices.*	65 (15.4)	105 (24.9)	58 (13.7)	152 (36.0)	42 (10.0)
19. Health care providers are sympathetic when I share my feelings and problems with them.	152 (36.0)	231 (54.7)	32 (7.6)	3 (0.7)	4 (0.9)
20. I feel comfortable to come back and continue receiving health services from my current facility.	140 (33.2)	211 (50.0)	56 (13.3)	12 (2.8)	3 (0.7)

*Negative Statement

4.5 Preventive practices on HIV/AIDS

Table 7 presents the level of preventive practices on HIV/AIDS among the respondents in the past three months. The mean score of preventive practices was 32 and standard deviation was 4. The score of preventive practices was defined as poor practice level when the score was less than or equal to 28 (32 - 4), as good practice level when the score was greater than or equal to 36 (32+4), and as moderate practice level when the score was from 29 to 35. According to frequency and percentage distribution of preventive practices level, 22.7% of the respondents had poor practice level, 51.9% had moderate practice level, and 25.4% had good practice level.

Table 8 shows the frequency and percentage distribution of preventive practices on HIV/AIDS among the respondents in the past three months. Regarding practice related to condom use, 57.8% of the respondents always used condoms at last anal sex, while 5% never used them at last anal sex. With their steady sexual partner, only 35.8% always used condoms, 48.1% sometimes used them, and 16.1% never used them. About

46.7% of the respondents always used condoms, while 6.9% never used condoms when they had anal sex with their male partner(s). More than half of the respondents, 56.6% always used condoms when they had sex with sex worker(s), and 53.6% always used condoms when they had sex with acquaintance(s), while 1.2% never used condoms with sex worker(s), and 3.3% never used them with acquaintance(s). Moreover, 55.5% of the respondents always used lubricants during anal sex, 39.6% sometimes used lubricants during anal sex, and only a few respondents,5%, never used lubricants during anal sex.

As for sexual relationship, only 10.2% of the respondents always had sex only with their steady sexual partner(s), 64.5% sometimes had sex only with their steady sexual partner(s), and 25.4% had never had sex only with their steady sexual partner(s). During having a sexual relationship with steady partner(s), 73.7% of the respondents sometimes had sex with other people, while 10.2% had never had sex with others. About 65.4% had sometimes had sex with causal sex partner(s) on more than one occasion, while 13% had never had sex with them on more than one occasion.

About 40% of the respondents always visited a MSM-friendly center or clinic to receive HIV counselling and testing, 57.1% sometimes visited a MSM-friendly center or clinic to receive HIV counselling and testing, but only a few respondents, 2.8% never visited an MSM-friendly center or clinic to receive HIV counselling and testing. Around 43.1% of the respondents had always been counselled and tested for HIV, while around 7% had never been counselled and tested for HIV. Among the respondents, 43.4% had always had in touch with a peer educator for HIV testing and counselling, while only 0.9% had never had in touch with a peer educator for HIV testing and counselling. With their steady sexual partners, 35.3% of the respondents had always disclosed each other's HIV status, while 20.9% had never disclosed each other's HIV status.

Table 7. Respondents by level of preventive practices on HIV/AIDS among the respondents in the past three months

Level of preventive practices (n=422)	Frequency (n)	Percentage (%)
Poor practice level (≤ 28 score)	96	22.7 %
Moderate practice level (29 – 35 score)	219	51.9 %
Good practice level (≥ 36 score)	107	25.4 %

Table 8. Respondents by preventive practices on HIV/AIDS among the respondents in the past three months

Statement (n=422)	Frequency (Percentage)		
	Always	Sometimes	Never
1. I used condoms at last sex.	244 (57.8)	173 (41.0)	5 (1.2)
2. I used condoms with my steady sexual partner.	151 (35.8)	203 (48.1)	68 (16.1)
3. I used condoms when I had anal sex with my male partner(s).	197 (46.7)	196 (46.4)	29 (6.9)
4. I had sex with sex worker(s) using condoms.	239 (56.6)	178 (42.2)	5 (1.2)
5. I had sex with acquaintance(s) using condoms.	226 (53.6)	182 (43.1)	14 (3.3)
6. I used lubricants during anal sex.	234 (55.5)	167 (39.6)	21 (5.0)
7. I only had sex with my steady sexual partner.	43 (10.2)	272 (64.5)	107 (25.4)
8. I had sex with other people during the time I were having a sexual relationship with my steady partner.*	68 (16.1)	311 (73.7)	43 (10.2)
9. I had sex with causal sexual partner(s) on more than one occasion.*	91 (21.6)	276 (65.4)	55 (13.0)

10. I visited a MSM-friendly center or clinic to receive HIV counselling and testing.	169 (40.0)	241 (57.1)	12 (2.8)
11. I had ever been counselled for HIV.	182 (43.1)	232 (55.0)	8 (1.9)
12. I had ever been tested for HIV.	182 (43.1)	233 (55.2)	7 (1.7)
13. I have had in touch with a peer educator for HIV testing and counselling.	183 (43.4)	235 (55.7)	4 (0.9)
14. With my steady sexual partner, I ever disclosed each other's HIV status.	149 (35.3)	185 (43.8)	88 (20.9)

*Negative Statement

Part II: Bivariate analysis

4.6. Association between socio-demographic characteristics and the level of preventive practices on HIV/AIDS in the past three months.

Table 9 shows the association between socio-demographic characteristics and the level of preventive practices on HIV/AIDS in the past three months.

There was no statistically significant association between dependent variable, the level of preventive practices on HIV/AIDS in the past three months and independent variables, marital status and current living condition.

However, age (years) was significantly associated with the level of preventive practices on HIV/AIDS in the past three months (p-value=0.000). The proportion of good and moderate practice was highest in the aged group of ≥36 years (93.9%) and it decreased when the age decreases (82% of the respondents were in the aged group 25 – 35 years, 70.7% of the respondents were in the aged group 20 – 24 years, and 50% were in the aged group of ≤19 years). There was a significant association between education and the level of preventive practices (p-value= 0.000). The proportion of good and moderate practice was highest in university graduate (90.1%) and it decreased when the education level decreases (78.8% of the respondents were in high school, 71.2% were in secondary school, and 50% were in primary school).

Moreover, occupation was significantly associated with the level of preventive practices (p-value= 0.026). The level of good and moderate practices was highest in NGO/INGO staffs (91.8%) compared to other kinds of occupation (87.5% of the respondents were Natkataw (Spirit medium), 81.8% owned business, 73.5 % were private/government employee, 73.1% worked in fashion sector (Hair style, Make-up, Dress designer), and 65.6% worked in other occupations such as drivers, shopkeepers, painters, male sex workers, spa workers, and students. Monthly income was also significantly associated with the level of preventive practices (p-value= 0.005). Those who had saving (87%) and those who had sufficient monthly income (82.2%) were higher in the proportion of good and moderate practices than those who did not have sufficient monthly income (66.9%).

In addition, other six independent variables such as characteristics of MSM (p-value = 0.005), ever tested for HIV (p-value = 0.038), HIV test result (p-value = 0.000), ever received a sexually transmitted infection check-up in the last 12 months (p-value = 0.011), respondents who had a STD in the last 12 months (p-value = 0.000), and currently regular receive HIV/STI-related health care services in MdM (p-value = 0.000) were significantly associated with the level of preventive practices on HIV/AIDS in the past three months. As for characteristics of MSM, the proportion of good and moderate practices was higher in Apwint (Feminine MSM), 81%, than in other characteristics of MSM (77.4% in Apone (Masculine MSM), and 65.2% in Tha Nge (Bisexual MSM)). Those who had ever tested for HIV, 77.9% had high proportion of good and moderate practices. Almost all of the respondents who had HIV positive (100%) were the highest proportion in good and moderate preventive practices compared to those who had HIV negative (72.3%), and those who had undisclosed HIV status (79.3%). Furthermore, the proportion of good and moderate preventive practices was high in the respondents who have ever received a sexually transmitted infection check-up in the last 12 months (78%), those who had a STD in the last 12 months (83%), and those who regularly receive HIV/STI-related health care services in MdM (84%).

Table 9. Association between socio-demographic characteristics and the level of preventive practices on HIV/AIDS in the past three months

Socio-demographic Characteristics (n=422)	Preventive practice N (%)		P-value
	Good Moderate	Poor	
Age (years)			
≤19	20 (6.1)	20 (20.8)	
20-24	82 (25.2)	34 (35.4)	
25-35	178 (54.6)	39 (40.6)	#0.000*
≥36	46 (14.1)	3 (3.1)	
Marital Status			
Never married	235 (72.1)	79 (82.3)	
Formally married	17 (5.2)	5 (5.2)	0.090
Live in with a partner but not married	74 (22.7)	12 (12.5)	
Education			
Primary School	12 (3.7)	12 (12.5)	
Secondary School	104 (31.9)	42 (43.8)	0.000*
High School	119 (36.5)	32 (33.3)	
University graduate	91 (27.9)	10 (10.4)	
Occupation			
Private/Government employee	72 (22.1)	26 (26.5)	
NGO/INGO staff	45 (13.8)	4 (8.2)	
Own business	54 (16.6)	12 (18.2)	
Work in the fashion sector (Hair style, Make-up, Dress designer)	106 (32.5)	39 (26.9)	#0.026*
Natkataw (Spirit medium)	28 (8.6)	4 (12.5)	
Others (Specify) ##	21 (65.6)	11 (34.4)	

Monthly income			
Sufficient	185 (82.2)	40 (17.8)	
Not sufficient	101 (66.9)	50 (33.1)	0.005*
Have saving	40 (87.0)	6 (13.0)	
Current living condition			
Almost living alone	91 (81.0)	21 (19.0)	
With parents	47 (67.0)	23 (33.0)	
With wife	17 (77.0)	5 (23.0)	0.432
With a male partner	85 (81.7)	19 (18.3)	
With friends	86 (75.4)	28 (24.6)	
Characteristics of MSM			
Apone(Masculine MSM)	106 (77.4)	31 (22.6)	
Apwint (Feminine MSM)	175 (81.0)	41 (19.0)	0.005*
Tha Nge(Bisexual MSM)	45 (65.2)	24 (34.8)	
Ever tested for HIV			
Yes	324 (77.9)	92 (22.1)	#0.038*
No	2 (33.3)	4 (66.7)	
If yes, HIV test result (n=416)			
HIV positive	62 (100)	0 (0.0)	
HIV negative	193 (72.3)	74 (27.7)	#0.000*
Undisclosed	69 (79.3)	18 (20.7)	
Ever received a sexually transmitted infection check-up in the last 12 months			0.011*
Yes	319 (78.0)	88 (22.0)	
No	7 (46.7)	8 (53.3)	
Respondents who have been told he had a STD in the last 12 months.			0.000*
Yes	190 (83.0)	39 (17.0)	
No	129 (72.5)	49 (27.5)	

Currently, regular receive HIV/STI-related health care services in MdM (n=422)			
Yes	274 (84.0)	52 (16.0)	0.000*
No	52 (54.2)	44 (45.8)	

Others (specify) - drivers, shopkeepers, painters, male sex workers, spa workers, and students.

Fisher's Exact test,*p-value< 0.05

4.7. Association between history of sexual activities and the level of preventive practices on HIV/AIDS in the past three months.

Table 10 presents the association between history of sexual activities and the level of preventive practices on HIV/AIDS in the past three months.

There was no statistically significant association between dependent variable level of preventive practices on HIV/AIDS and independent variables type of sex partner at first sex with anyone, give presents to have first anal sex with a man, receive presents to have first anal sex with a man, having sex with women, respondents who have steady sexual partner in the past three months, type of steady sexual partner, oral sex with steady partner, anal sex with steady partner, type of casual partner, oral sex with casual partner, give or receive presents to have sex with casual partner, and having sex with a man who gave money in the last three months.

Age at first anal sex with a man was significantly associated with the level of preventive practices on HIV/AIDS in the past three months (p-value = 0.000). The proportion of good and moderate practices was highest in the aged group of 20 -25years (100%), and as the aged groups became older, the level of good and moderate practices was higher (74.1% of the respondents were in the aged group of 7-11 years, 71.1% were in the aged group of 12-14 years, and 76.7% were in the aged group of 15 -19 years). There was also a significant association between first anal sex with a man using condom and the level of preventive practices (p-value = 0.004). The proportion of good and moderate practices was higher in the respondents who used condom during first anal sex with a man (86.4%) than those who did not used it (72.7%). Moreover, other two independents variables such as respondents who have casual partner in the past 3 months (p-value = 0.002), and last anal sex with male partners who gave money using

condoms (p-value = 0.001) were statistically associated with the level of preventive practices on HIV/AIDS in the past three months.

Table 10. Association between history of sexual activities and the level of preventive practices on HIV/AIDS in the past three months

History of sexual activities (n=422)	Preventive practice N (%)		P-value
	Good Moderate	Poor	
Type of sex partner at first sex with anyone			
Male	296 (77.9)	84 (22.1)	0.637
Female	30 (71.4)	12 (28.6)	
Age at first anal sex with a man			
7-11	20 (74.1)	7 (25.9)	
12-14	81(71.1)	33 (28.9)	#0.000*
15-19	184 (76.7)	56 (23.3)	
20-25	41 (100)	0(0.0)	
First anal sex with a man using condom			
Yes	121 (86.4)	19 (13.6)	0.004*
No	205 (72.7)	77 (27.3)	
Give presents to have first anal sex with a man			
Yes	32 (59.1)	11 (25.6)	0.880
No	294 (77.5)	85 (22.4)	
Receive presents to have first anal sex with a man			
Yes	140 (77.4)	41 (22.7)	0.498
No	186 (54.2)	55 (22.8)	
Having Sex with women			
Yes	81 (70.4)	34 (29.6)	0.101
No	245 (79.8)	62 (20.2)	

Respondents who have steady sexual partner in the past 3 months (n=422) Yes No	226 (77.9) 100 (75.8)	64 (22.1) 32 (24.2)	0.071
Type of steady sexual partner (n=290) Male Female	200 (79.0) 26 (70.0)	53 (21.0) 11 (30.0)	0.473
Oral sex with steady partner (n=290) Yes No	181 (77.6) 45 (79.0)	52 (22.3) 12 (21.0)	0.473
Anal sex with steady partner (n=290) Yes No	206 (79.5) 20 (64.5)	53 (20.5) 11 (35.5)	0.136
Respondents who have casual partner in the past 3 months (n=422) Yes No	278 (75.0) 48 (90.6)	91 (25.0) 5 (9.4)	0.002*
Type of casual partner (n=369) Male Female	267 (76.5) 11 (55.0)	82 (23.5) 9 (45.0)	0.071
Oral sex with casual partner (n=369) Yes No	237 (74.8) 41 (79.0)	80 (25.2) 11 (21.0)	0.810

Give or receive presents to have sex with casual partner (n=369)			
Yes, I gave.	26 (78.8)	7 (21.2)	0.554
Yes, I received.	99 (72.8)	37 (27.2)	
Yes, I not only gave but also received.	31 (73.8)	11 (26.2)	
None of the above.	122 (77.2)	36 (22.8)	
Having sex with a man who gave money in the last 3 months (n=422)			
Yes	195 (74.7)	66 (25.3)	0.067
No	131 (81.4)	30 (18.6)	
Last anal sex with male partners who gave money using condoms (n=397)			
Yes	195(84.4)	36 (15.6)	0.001*
No	115 (69.3)	51 (30.7)	

Fisher's Exact test, *p-value<0.05

4.8 Association between the level of knowledge and the level of preventive practices on HIV/AIDS in the past three months

Table 11 shows the association between the level of knowledge and the level of preventive practices on HIV/AIDS in the past three months. The level of knowledge was significantly associated with the level of preventive practices on HIV/AIDS in the past three months (p-value 0.013). The proportion of good and moderate practices was highest in those who had high level of knowledge (82.1%) compared to those who had moderate level of knowledge (75.7%), and those who had low level of knowledge (57.9%). As the level of knowledge decreases, the level of good and moderate practices decrease.

Table 11. Association between the level of knowledge and the level of preventive practices on HIV/AIDS in the past three months

Level of Knowledge(n=422)	Practice N (%)		P-value
	Good Moderate	Poor	
Low level of knowledge	22 (57.9)	16 (42.1)	
Moderate level of knowledge	134 (75.7)	43 (24.3)	0.013*
High level of knowledge	170 (82.1)	37 (17.9)	

*p-value<0.05

4.9 Association between the level of attitude and the level of preventive practices on HIV/AIDS in the past three months

Table 12 shows the association between the level of attitude and the level of preventive practices on HIV/AIDS in the past three months. The result presents that the level of attitude are significantly associated with the level of preventive practices on HIV/AIDS in the past three months (p-value = 0.002). The proportion of good and moderate practices on HIV/AIDS was highest in the respondents who had positive attitude (84.5%), compared to neutral attitude (80.5%), and negative attitude (62.2%).

Table 12. Association between the level of attitude and the level of preventive practices on HIV/AIDS in the past three months

Attitude (n=422)	Practice N (%)		P-value
	Good Moderate	Poor	
Negative attitude	56 (62.2)	34 (37.8)	0.002*
Neutral attitude	210 (80.5)	51 (19.5)	
Positive attitude	60 (84.5)	11 (15.5)	

*p-value<0.05

Part III: Multi-variable Logistic Regression Analysis

Binary logistic regression model was used to find out whether there were statistically significant relationships between the dependent variable and the independent variables which have p-value less than 0.2 in bivariate analysis and some variables that have significant association in previous studies (even >0.2 in bivariate analysis). To use binary logistic regression model, dependent variable preventive practice level was changed to dichotomous outcome. The score of preventive practices was defined as poor practice level when the score was less than or equal 28, and as good practice level when the score was greater than 28.

4.10 Binary logistic regression analysis for the association between socio-demographic characteristics and preventive practices on HIV/AIDS in the past three months.

Table 13 shows the binary logistic regression analysis of each independent socio-demographic characteristics associated with preventive practices on HIV/AIDS in the past three months. Ten variables which have p-value less than 0.2 (age, education, occupation, monthly income, characteristics of MSM, ever tested for HIV, HIV test result, ever received a sexually transmitted infection check-up in the last 12 months, respondents who have been told he had a STD in the last 12 months, and currently, regular receive HIV/STI-related health care services in MdM), and two variables (marital status, and current living condition) which have an association in previous studies were put into the logistic regression analysis to find the association with preventive practices on HIV/AIDS. After the first step of logistic regression, the variables which have p-value more than 0.05 were excluded from the analysis to get the final model as below.

Table 13. Binary logistic regression analysis of socio-demographic characteristics associated with preventive practices on HIV/AIDS in the past three months.

Variables	Preventive practices on HIV/AIDS in the past three months			
	B	**S.E**	**Crude OR (95% CI)**	**p-value**
Age group				
≥36 (ref :)				0.004*
≤19	-2.183	0.699	0.11(0.03 - 0.44)	0.002
20-24	-1.510	0.651	0.22(0.06 -0.79)	0.020
25-35	-1.075	0.639	0.34(0.10 - 1.19)	0.092
Education				
University graduate (ref :)				0.019*
Primary School	-1.679	0.575	0.19(0.06-0.58)	0.003
Secondary School	-1.021	0.403	0.36(0.16-0.79)	0.011
High School	-0.791	0.405	0.45(0.21-1.00)	0.051
Ever tested for HIV				
Yes (ref :)				0.021*
No	-2.021	0.875	0.13(0.02-0.74)	
Ever received a sexually transmitted infection check-up in the last 12 months				
Yes (ref :)				0.006*
No	-1.462	0.532	0.23(0.08-0.66)	
Currently, regular receive HIV/STI-related health care services in MdM (n=422)				
Yes (ref :)				0.000*
No	-1.260	0.271	0.28(0.17-0.48)	

*p-value <0.05

The age group was strongly and negatively associated with preventive practices on HIV/AIDS in the past three months (p-value = 0.004), which maintained significant, and as the age group become younger, the level of good preventive practices was lower. The respondents with ≤ 19 years old were less likely to have preventive practices by 0.11 times than those with ≥ 36 years old.

Education status maintained significant with preventive practices (p -value = 0.019), and as educational level decreased, the level of good preventive practices decreased. The respondents who attended primary school were less likely to have preventive practices by 0.19 times than those who attended university.

Ever tested for HIV was strongly and negatively associated with preventive practices on HIV/AIDS (p-value = 0.021) which maintained significant. The respondents who have never tested for HIV were less likely to use preventive practices on HIV/AIDS by 0.13 times than those with ever tested for HIV.

Receiving a sexually transmitted infection check-up in the last 12 months was also strongly and negatively associated with preventive practices on HIV/AIDS (p-value = 0.006). Respondents who have not received a sexually transmitted infection check-up in the last 12 months were less likely to have practices on HIV/AIDS prevention by 0.23 times than those who have received it in the last 12 months.

Currently, regular receiving HIV/STI-related health care services in MdM also maintained significant with preventive practices (p-value = 0.000). The respondents who have not received HIV/STI-related health care services in MdM were less likely to have preventive practices by 0.28 times than those who have received the services in MdM regularly.

4.11 Binary logistic regression analysis for history of sexual activities associated with preventive practices on HIV/AIDS in the past three months.

Table 14 shows the binary logistic regression analysis of each independent history of sexual activities associated with preventive practices on HIV/AIDS in the past three months. After the first step of logistic regression, the variables which have p-value more than 0.05 were excluded from the analysis.

The results show that first anal sex with a man using condom was strongly and negatively associated with preventive practices on HIV/AIDS in the past three months (p-value = 0.001), which maintained significant. The respondents who had first anal sex with a man without condom were less likely to use preventive practices on HIV/AIDS by 0.40 times than those who used condom at first anal sex with a man.

Having sex with women was moderately and positively associated with preventive practices on HIV/AIDS (p-value = 0.035), which is not significant in bivariate analysis. The respondents who had not sex with women were more likely to have preventive practices on HIV/AIDS by 1.71 times than those having sex with women.

Respondents who had casual partner in the past 3 months was also strongly and positively associated with preventive practices on HIV/AIDS (p –value = 0.024), which maintained association. Respondents who did not have causal partner in the past 3 months were more likely to use preventive practices by 3.02 times than those who had causal partner.

Table 14. Binary logistic regression analysis for history of sexual activities associated with preventive practices on HIV/AIDS in the past three months.

Variables	Preventive practices on HIV/AIDS in the past three months			
	B	**S.E**	**Crude OR (95% CI)**	**p-value**
First anal sex with a man using condom Yes (ref :) No	-0.915	0.285	0.40(0.23 – 0.70)	0.001*
Having Sex with women Yes (ref :) No	0.570	0.254	1.71(1.04-2.83)	0.035*

Respondents who have casual partner in the past 3 months Yes (ref:) No	1.104	0.485	3.02(1.15-7.88)	0.024*

*p-value <0.05

4.12 Binary logistic regression analysis for the association between level of knowledge and preventive practices on HIV/AIDS in the past three months.

Table 15 shows that the level of knowledge was strongly and positively associated with preventive practices on HIV/AIDS in the past three months (p-value = 0.005). The respondents who had high level of knowledge were more likely to use preventive practices by 3.34 times than those who had low level of knowledge.

Table 15 Binary logistic regression analysis of level of knowledge associated with preventive practices on HIV/AIDS in the past three months.

Variables	**Preventive practices on HIV/AIDS in the past three months**			
	B	**S.E**	**Crude OR (95% CI)**	**p-value**
Level of knowledge				
Low level of knowledge (ref :)				0.005*
Moderate level of knowledge	0.818	0.372	2.27(1.09-4.70)	0.028
High level of knowledge	1.206	0.375	3.34(1.60-6.97)	0.001

*p-value <0.05

4.13 Binary logistic regression analysis for the association between level of attitude and preventive practices on HIV/AIDS in the past three months.

Table 16 shows that the level of attitude was strongly and positively associated with preventive practices on HIV/AIDS in the past three months (p-value – 0.011). The respondents who had positive attitude were more likely to use preventive practices on HIV/AIDS by 2.63 times than those who had negative attitude.

Table 16 Binary logistic regression analysis of level of attitude associated with preventive practices on HIV/AIDS in the past three months.

Variables	Preventive practices on HIV/AIDS in the past three months			
	B	**S.E**	**Crude OR (95% CI)**	**p-value**
Level of attitude				
Negative attitude (ref :)				0.011*
Neutral attitude	0.777	0.280	2.18(1.26-3.77)	0.006
Positive attitude	0.965	0.411	2.63(1.17-5.88)	0.019

*p-value <0.05

CHAPTER V
DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Discussion

This cross-sectional study was conducted on 422 MSM (Men who have sex with men) attending Medecins du Monde organization in Yangon, Myanmar. The study was carried out to describe the socio-demographic characteristics, history of sexual activities, knowledge on HIV/AIDS transmission, prevention and information, attitudes, and preventive practices among MSM, and to assess the association between these independent variables and dependent variable (preventive practices on HIV/AIDS).

The principal finding of the preventive practices on HIV/AIDS among 422 MSM respondents indicated that 25.4% of the respondent had good practice, 51.9% had moderate practice, and 22.7% had poor practice on HIV/AIDS prevention in the past three months. Regarding to consistent (always) condom use, 57.8% of the respondents always used condoms at last sex, 35.8% always used with their steady sexual partner, 46.7% at anal sex with their male partner(s), 56.6% with sex workers, and 53.6% with acquaintance(s). The findings in condom use points out that consistent condom use among MSM and their steady partners was very low even though they had good knowledge and attitude on HIV/AIDS prevention practices. The assessment in this study explained the reasons for high HIV prevalence among MSM population in Yangon as reported in National Strategic Plan on HIV and AIDS Myanmar 2016-2020 (36). In addition, more than half of the respondents (55.5%) always used lubricants during anal sex. In contrast, consistent condom use with steady sexual partner and at anal sex with their male partners were lower than findings from Oo, M. Z., (2011) (77), showing that 47.6% always used condoms with steady sexual partner, and 56.6% always used condoms for anal sex with partner in the past 4 months. However, lubricant use in present study was higher than Oo, M. Z., (2011) (29.8%) (77).

As for sexual relationship among MSM respondents, only10.2% of the respondents always had sex only with their steady sexual partner in the past three months. Majority of them (73.7%) sometimes had sex with other people during a

relationship with their steady partner. About 65.4% sometimes had sex with causal partner(s) on more than one occasion. In this study, multiple sex partners were reported by study respondents. For many MSM, relationship were connected to economic and practical dependence, but not primarily centered on romantic feelings. Sexual relationship varied in terms of relationship ideals, emotional attachment, commitment, sexual satisfaction and exchange of money or gifts, Bengtsson, L., et al. (2013) (98).

In relation to health seeking practice, 40% of the respondents always visited a MSM-friendly clinic for HIV counselling and testing. Among MSM respondents, around 43.1% had always been counselled and tested for HIV, and 43.4% have always had in touch with a peer educator for HIV testing and counselling. Only 35.3 % of the respondents always disclosed HIV status with their steady sexual partners. This finding increased the issue of underdiagnosed among HV-infected men who may fear of stigma and discrimination. The common reasons for failure of testing among irregular testers and non-testers were including fear of health seeking services, stigma, discrimination, fear of HIV positive disclosure, embarrassment to go to the clinic, fear of exclusion and rejection from families and friends, and fear of being harassed or arrested. This may support from the previous study Vutthikraivit, P., et al. (2014) indicated that the reasons for avoiding from HIV testing were fear of test result, afraid of stigma and discrimination (99).

Socio-demographic characteristics

In this study, majority of the respondents were 25 -35 years old, never married, had high school education, worked in the fashion sector, had sufficient monthly income, current living with friends, self-identified as Apwint (Feminine MSM). Almost all the respondents had ever tested for HIV (98.6%), and received a sexually transmitted infection check-up in the last 12 months (96.4%). Among them, most of the respondents (63%) were HIV negative, however, 54% had been told they had a sexually transmitted disease in the last 12 months. Currently, 77% of the respondents regularly used HIV/STI services in MdM.

In bivariate analysis, age group (years) was significantly associated with preventive practices on HIV/AIDS (p-value= 0.000), and the older the age, the higher the level of good and moderate practices on HIV/AIDS. The age-group of 36 years and

above were more likely to take good and moderate practices than the younger group. This is consistent with the study which shows that as age increased, respondents were more likely to take HIV testing and counselling (62), and more likely to use condoms when having sex (66, 77). In multi-variable analysis, age-group became strongly associated with preventive practices on HIV/AIDS (p-value= 0.004), and the level of preventive practices increased when the age-group increased. This is the same in the study of (Larmarange J et al., 2010) (67), the probability of inconsistent condom use was significantly higher in young respondents with less than or equal 19 years old than those with18 -24 years old, and more than or equal 35 years old.

In bivariate analysis, marital status was not significantly associated with preventive practices on HIV/AIDS. The respondents living with a partner but not married were more able to do good and moderate preventive practices than those with formally married and never married. In contrast, the study in Mandalay, Myanmar, Oo, M. Z. (2011), showed that there was an association between marital status and condom use with partners (p-value=0.014), and the respondents who were never married were more likely to use condoms than formally married ones (77). The study in Beijin China, Choi, K.-H., et al. (2004) also showed that the level of condom use remained low between MSM and their partners (68).

In educational level, it was strongly associated with preventive practices on HIV/AIDS (p-value=0.019) in multivariate analysis, which is also significant in bivariate analysis. The higher the education level, the higher the preventive practices level on HIV/AIDS among the respondents. This is consistent with the study in China (Li, R., et al., 2016), which showed that MSM with high educational level were more likely to have an HIV test by 2.02 times than those with lower educational level (65). Besides, there was an increase in condom use with sexual partners as the level of educational status increased. The condom use in those with university graduate were higher by 1.92 times than those with lower educational level (77).

Occupation was associated with preventive practices on HIV/AIDS (p-value = 0.023) only in bivariate analysis. The proportion of good and moderate preventive practices were the highest in respondents who worked as NGO/INGO staff (91.8%) compared to those with other kinds of occupation (private/government employee (73.5%), own business (81.8%), work in the fashion sector – hair style, make up, dress

designer (72.1%), spirit medium (87.5%), and others (65.6%)). This is consistent with the study in Mandalay Myanmar, which revealed that occupation was associated with good practice as condom use (p-value = 0.011) in bivariate analysis. It was decreased in those who worked in faction sector, spirit medium, and other occupations such as painters, shopkeeper, carpenter, dish washer, and waiter in compared to jobless (77). However, the study in Cambodia revealed that occupation was not associated with recent HIV testing although testing HIV was increased in those who owned business, students, those working in fashion sector and laborer in compared to unemployed (78).

Monthly income was found to have a significant association with preventive practices on HIV/AIDS (p-value = 0.005) in bivariate analysis. Monthly income and have saving increased preventive practices on HIV/AIDS among the respondents. On the other hand, lower income reduced having tested for HIV among MSM (79).

In this study, current living condition was not associated with preventive practices on HIV/AIDS (p-value= 0.432) in bivariate analysis. However, the proportion of good and moderate preventive practices were higher in respondents living with a male partner and almost living alone, 81.7% and 81.0% respectively, than respondents with other living conditions (living with parents (67%), with wife (77%), and with friends (86%). The result was not consistent with a survey in Myanmar conducted by UNESCO and Medical Research Myanmar, which revealed that current living conditions were significantly associated with condom use and being tested for HIV. MSM living with friends had over four times higher adjusted odds ratio of condom use compared to those living with their parents (p-value = <0.01). MSM staying with friends had two times higher odds ratio of ever being tested for HIV compared to those living with their parents (p-value <0.05) (5).

There was a significant association between characteristics of MSM and preventive practices on HIV/AIDS (p-value = 0.005) in bivariate analysis, but not significant in multivariate analysis. Majority of MSM respondents in this study were self-identified as Apwint (Feminine MSM). Those who self-identified as Apwint used more good and moderate preventive practices (81%) than other kinds of MSM (Apone (Masculine MSM), 77.4%, and Tha Nge (Bisexual MSM), 65.2%), which could be due to higher proportion of Apwint MSM in this sample (51.2%). Moreover, MSM are influenced by those self-sexual identification. For example, masculine MSMs like

Apone and Tha-Nge_ such as having multiple partners, and not seeking help _ may increase HIV risk, decrease preventive practices and service uptake among MSM. They are often hidden and believed to be straight. MSM with more masculine gender expression may not be acknowledged by most service providers.

The previous study Pham et al, 2017 also attempted to explain the association between sexual identities and ever tested for HIV in multivariable analysis (56). Apwint were higher adjusted odds of ever tested for HIV (aOR=3.11) in compared with Tha-Nge, while Apone were higher adjusted odds of ever tested HIV (aOR=1.96) compared with Tha-Nge. In addition, one study in Myanmar also investigated that Apwint MSM were more likely to be tested for HIV by 1.21 times than Apone MSM (5).We however, did not find evidence supporting the association between sexual identity of MSM and having HIV tested in the past six months as reported in Cambodia Study (78). In contrast, one survey in Myanmar showed that the adjusted odds of condom use at last sex were 73% and 71% lower among Apwint and Tha-nge compared to Apone ($p< 0.05$) (5). Moreover, Apwint had more male partners, lower condom use, and higher rates of self-reported STI than those identified as Tha-Nge and Apone in Myanmar (100).

Ever tested for HIV was significantly associated with preventive practices on HIV/AIDS at $p<0.05$ in either bivariate or multivariate analysis. Almost all of the respondents, 98.6% in the study ever tested for HIV. The proportion of preventive practices on HIV/AIDS were 77% higher in the respondents who had ever tested for HIV than those who had never tested for HIV. Moreover, the respondents with never tested for HIV were less likely to use preventive practices by 0.13 times than those with ever tested for HIV. The study in Cambodia showed that 83.6% of the respondents had ever been tested for HIV, and MSM who had been tested for HIV were more likely to report using a condom at last sexual intercourse with their sexual partners (78).

Another significant association for preventive practices among the respondents was HIV test result, which is significant at (p-value = 0.000) in bivariate analysis, but not in multivariate analysis. HIV negative and Undisclosed HIV status seemed to be decrease preventive practices on HIV/AIDS among the MSM respondents. The findings in the study of Aung, T., et al., 2016 explained that HIV-negative MSM were more likely to engage in having any unprotected anal sex in the last month, the last

partner was the same HIV serostatus as the respondent, and a condom was not used at the last episode of anal sex than HIV-positive MSM (21.8 vs. 3.5%), respectively (37). It was possible that non-disclosed MSM were largely absent from HIV services such as HIV counselling and testing, STI testing, receiving HIV related information (11). On the other hand, the studies of sexual transmission behaviors among HIV-positive MSM in Japan and Thailand found out high levels of inconsistent condom use or unprotected anal intercourse with male partners of unknown or HIV-negative status (101, 102).

There was a strong and negative association between ever received a sexually transmitted infection check-up in the last 12 months and preventive practices on HIV/AIDS (p-value 0.006) in multivariate analysis, which is also significant in bivariate analysis. Majority of MSM (96.4%) in this study tested STI in the last 12 months. Preventive practices on HIV/AIDS was low in the respondents who had never received a sexually transmitted infection check-up in the last 12 months by 0.23 times compared to those with ever received a SIT check-up in the last 12 months. Weiss, K. M., et al. (2017) investigated that STI testing patterns and HIV testing frequency were highly associated with each other in a cross-sectional online assessment of MSM app users in Bangkok (103). As most NGO/INGOs clinics targeting MSM in Myanmar provided both HIV counselling and testing, and clinical services of STI, majority of the respondents who received STI testing also received HIV counselling and testing (11).

Using a ‘yes’ and ‘no’ response format, respondents were asked whether they had been diagnosed with a sexually transmitted disease in the last 12 months. The findings revealed that respondents who have been told he had a STD in the last 12 months was associated with preventive practices on HIV/AIDS at (p-value= 0.000) in bivariate analysis, but not significant in multivariate analysis. Those who had a STD in the last 12 months were high in the proportion of good and moderate preventive practices on HIV/AIDS (83%). This finding may be explained by the study in Zhou, J., et al. (2018), which showed that those who had been diagnosed with a sexually transmitted disease were more likely to have had an HIV test (104).

Currently, regular received HIV/STI-related health care services in MdM was strongly and negatively associated with preventive practices on HIV/AIDS at p-value< 0.05 both in bivariate and multivariate analysis. There was a 0.32-time decrease in preventive practices on HIV/AIDS with the respondents who haven’t received

HIV/STI-related services in MdM currently and regularly in compared to those who received the services currently and regularly. This could be explained by the fact that MdM has been working alongside MSM in Myanmar, which promoted prevention activities including condoms distribution, voluntary counselling and testing for HIV and sexually transmitted infections (STI), and behaviour change communication activities in service centres and in outreach, working together with the state and other eighteen organizations in Yangon. According to annual progress report 2015, 3275 MSM have been reached with prevention services by MdM (105). In 2017, 7034 Sex workers and men having sex with men had access to prevention activities (39).

However, the researcher could not find references in the literature about less preventive practices in those who haven't received currently and regularly HIV/STI related services in MdM in compared to those who have received them in MdM.

History of sexual activities

Of 422 respondents, 90% of the respondents had first sex with male and only 10% had first sex with female. Most of them experienced first anal sex with a man at the age of 15 -19 followed by the age of 12-14 years. As the mean age at first sex was 15 years old, it was younger than the mean age at first sex in Thailand which was 18 years old (106). Among the respondents who had first anal sex with a man, only 33.2% used condoms, and 42.9% took presents while 10.2% gave presents at first anal sex with a man. The finding in condom use at first anal sex was consistent with the finding from one survey in Yangon, showing that 33% of 200 respondents used condoms at first anal sex (5).

In this study, majority of the respondents (72.7%) had no history of having sex with women that is in contrast to the findings of Nyoni, J. E. and M. W. Ross, 2013, which showed that two third of 271MSM had sexual relationship with women (107). Out of 422 respondents, 68.7% had steady sexual partner and 89.3% had causal sex partner that is high percentage like other countries. Among them, over 85% of the respondents had male steady and casual sex partners, about two third of them had risk behaviour of oral sex with both male steady and casual partners, and 89.3% of the respondents with steady partners had anal sex with them. MSMs are one of the most

risk groups of HIV transmission in Myanmar because of their risky sexual practices like having multiple sexual partners. In this study, most respondents had sexual relationship with causal partners on more than one occasions while having their steady partners, therefore, the number of casual partners among respondents were higher than those with steady partners.

Among the respondents who had causal partner, those who received presents (36.9%) were more than those who gave presents (8.9%) to have sex with them. The results are consistent with the study in Jamaica, which revealed that 35.9% of 449 MSM reported receiving gifts for sex (108).In the last three months, 61.8% of the respondents had sex with a man who gave money. Out of 397 MSM, half of them (58.2%) used condoms at last anal sex with male partners who gave money. These findings indirectly indicate that those who received the presents when having anal sex with causal partners or men giving money were sex workers. Male sex workers were barely identified as sex workers. There are no accurate data for this group in the country due to criminalization, discrimination and stigmatization of same-sex practices, and commercial sex. Most male sex workers were younger and lower income men. They offer sex to older gay or bisexual men, and women in exchange for economic supports like food, shelter, gifts, and drugs.

In bivariate analysis, type of sex partner at first sex with anyone was not associated with preventive practices on HIV/AIDS (p-value=0.637) which was similar to the study among MSM in Mandalay, showing that type of sex partner at first sex with anyone was not associated with condom use (77). However, age at first anal sex with a man was associated with preventive practices in bivariate analysis, but not in multivariate analysis, with highest proportion of good and moderate preventive practices in the age-group of 20-25 years. The findings of Xiao, C., et al., (2017) showed that young men having sex with men were more likely to neglect condom use during first anal sex if they were younger (OR=3.262, P=0.001) (109). Li, R., et al. (2017) also investigated that recent HIV testing was associated with homosexual debut age (110). There was also a significant association between first anal sex with a man using condom and preventive practices on HIV/AIDS (p-value = 0.004) in bivariate analysis, which is also significant in multivariate analysis (p-value = 0.001). Those who did not use condoms at first anal sex with a man decreased the practices on HIV

prevention. This was in consistent to the findings in Xiao, C., et al. (2017), which showed that both bivariate and multivariate first time condom use with a man was associated with preventive practices. Findings investigated that young MSM who did not use a condom during first anal sex were more likely to produce unprotected sexual behavior subsequently (109).

As for giving or receiving presents at first anal sex, there was no significant association between giving presents to have first anal sex with a man (p-value= 0.880), receiving presents to have first anal sex with a man (p-value=0.498) with preventive practices on HIV/AIDS in bivariate analysis. Nevertheless, having sex with women was strongly and positively associated with preventive practices on HIV/AIDS (p-value= 0.035) in multivariate analysis, but not significant in bivariate analysis. The respondents who had sex with women were more likely to have preventive practices on HIV/AIDS than those who did not have sex with women. This finding was inconsistent with the assessment from the study in Cambodia, which showed that having sexual intercourse with women was not associated with HIV testing (p-value=0.15) (78).

Having steady sexual partner in the past 3 months was not associated with preventive practices on HIV/AIDS (p-value=0.071) in either bivariate or multivariate analysis. Majority of the MSM respondents in the study (68.7%) had steady sexual partner, and the proportion of good and moderate practices was not much different in both those with steady partners (77.9%) and those without steady partners (75.8%). The respondents having steady sexual partner were more likely to have preventive practices on HIV/AIDS, which was inconsistent with the study in Aung, T., et al. (2013), showing that MSM in Yangon used condoms less often with steady sexual male partners (100).

Bivariate and multivariate analysis for type of steady sexual partner was not significantly associated with preventive practices on HIV/AIDS at $p<0.05$ level although MSM who had steady partner as males were higher in the proportion of good and moderate preventive practices than those with female steady partners. This was inconsistent with the findings from Oo, M. Z., (2011), in which there was a significant association between type of steady partner and condom use with sexual partner. It attempted to explain that MSM who had female steady partner were less likely to have safe sex by 0.749 times than those having male steady partner (77).

In bivariate analysis, there was no significant association between oral sex with steady partners and causal partners with preventive practices on HIV/AIDS (p-value=0.473), (p-value=0.810) respectively. This is inconsistent with the study of Li, R., et al. (2017) which found out that having oral sex with both partners in the past 6 months was associated with recent HIV testing. The respondents with having oral sex with any partners in the past 6 months were less likely to have recent HIV testing by 0.33 times than those with not having oral sex in the past 6 months. It was also associated with condom-less anal intercourse (OR=1.07, 95%CI), in the past six months (110).

Anal sex with steady partner was not significantly associated with preventive practices on HIV/AIDS at p-value<0.05 level both in bivariate and in multivariate analysis. Most of MSM having steady partner had anal sex with them (89.3%).The findings in this study were consistent with findings from Cambodia, revealing that having sexual intercourse with steady partner was not associated with HIV testing (p-value=0.14) (78).

Respondents who have causal partner in the past 3 months was strongly and positively associated with preventive practices on HIV/AIDS at p-value<0.05 level in either bivariate or multivariate analysis. Those who did not have causal partner in the past 3 months seem to be increase preventive practices on HIV/AIDS by 3.02 times compared to those having causal partner in the past 3 months. This was explained by the findings from the study in Israle (111). Among all participants, 73.4% had causal partners and the prevalence of high risk sexual practices is high with causal partners. Having high numbers of causal partners increased unprotected anal intercourse with causal partners by 4.31 times compared to those who did not have causal partners.

In bivariate analysis, type of causal partner was not associated with preventive practices on HIV/AIDS (p-value= 0.092). The proportion of good and moderate preventive practices on HIV/AIDS increase in the respondents with male causal partners, 76.5%. This is consistent to the findings of Oo, M. Z., (2011), in which type of casual sex partner was not associated with condom use, but MSM with female causal partners used condoms more than those having male causal partners (77).

In bivariate analysis, giving or receiving presents to have sex with causal partner was not significantly associated with preventive practices on HIV/AIDS (p-value=0.554), which is consistent with Oo, M. Z., (2011), revealing that respondents giving or receiving presents to have sex with causal partner used fewer condoms than those who did not give or receive them to have sex with causal partner even though giving or receiving presents to have sex with causal partner was not associated with condom use (77).

Moreover, having sex with a man giving money in the last 3 months was not significantly associated with preventive practices on HIV/AIDS at $p<0.05$ level either in bivariate or in multivariate analysis. In contrast, Newman, P. A., et al. (2012) found out that having sex with a man giving money in the last three months was associated with unprotected anal sex. Among community based organization participants, over one-third (34.8%) reported having sex with a man in exchange for money. Those having sex with a man giving money in the last three months had 74% lower odds of engaging in unprotected anal sex, (AOR=0.24, 95%CI) (112).

In bivariate analysis, last anal sex with male partners who gave money using condoms was significantly associated with preventive practices on HIV/AIDS (p-value=0.001), but not significant in multivariate analysis. This is inconsistent with the findings of Yi, S., et al. (2015), showing that Condom use in the last time selling sex to men was not associated with HIV testing (p-value-0.29) (78).

Knowledge on HIV/AIDS, transmission, prevention, and information on HIV/AIDS

The majority of MSM in this study responded correctly to most of HIV knowledge questions. Of 422, 49.1% had high level of knowledge and 41.9% had moderate level of knowledge which seems to be sufficient knowledge. However, there was large knowledge gap noted in a statement regarding “there is no need to use condom with a steady partner”, in which 66.1% gave incorrect answer. Even though level of knowledge on HIV/AIDS was high, a significant minority of MSM in this study still had incorrect knowledge in the statements regarding “there is a cure for HIV/AIDS, 32.2%”, “a person with HIV can look and feel healthy, 33.9%”, “a person can be

infected with HIV for 5 years or more without getting AIDS, 34.1%", "there is a vaccine that can stop adults from getting HIV, 25.4%", and "a person can get HIV by getting an injection from a needle that was already used by someone else, 31.0%".

Another important misconception was that 43.4% of the respondents thought it is impossible to get HIV/AIDS by having sex with a healthy looking person. This can lead some MSM not to use preventive practices, as they assumed that if their partner look healthy, they cannot get HIV when having sex. There was other critical mistaken knowledge on "having sex without condom use only once will not infect a person with HIV/AIDS, 37.9%", and "taking a test for HIV one week after having sex will tell a person if he has HIV, 41.2%," which put MSM at risk for HIV transmission among MSM community.

All these misconceptions can lead MSM not to use preventive practices, increase the risk of getting HIV among themselves, delay using appropriate treatment when they get HIV, and being a potential bridge of HIV transmission among heterosexual population. Yi, S., et al. (2015) showed that even though HIV knowledge among MSM were generally good, there is still a significant minority of men having sex with men with mistaken knowledge that is linked to preventive practices, leading to HIV epidemic (78).

After testing the association, the level of knowledge among the respondents are strongly and positively associated with preventive practices on HIV/AIDS in the past three months. The higher the level of knowledge, the higher the level of preventive practices on HIV/AID among MSM respondents. The result showed that those having high level of knowledge were more likely to have HIV/AIDS preventive practices by 3.34 times than those having low level of knowledge, while the respondents having moderate level of knowledge were more likely to have preventive practices by 2.27 times compared to those having low level of knowledge.

Another research in South Korea explored the same association between HIV knowledge level and preventive practices, finding that lower level of knowledge was associated with inconsistent condom use, and those having low level of knowledge were less condom use than those with high level of knowledge (89). The findings in Pham,

M. D., et al., (2017) also showed that having good HIV-related knowledge was associated with lifetime and recent HIV testing (56).

Attitude towards HIV/AIDS and barriers on HIV/AIDS preventive practices

Most of MSM respondents (61%) in this study expressed neutral attitude towards HIV/AIDS and barriers on HIV/AIDS prevention. This was higher than the study in South Korea, Sohn, A. and B. Cho (2012), revealing that only about one third of the respondents (30%) were neutral in attitude towards HIV/AIDS prevention (89). In this study, there was few incorrect attitude towards HIV/AIDS. 45.1% of the respondents disagree that the risk they will get HIV/AIDS is high, and 55.4% agreed that they will feel depress when they get HIV. These incorrect attitudes can put them into high HIV transmission among themselves.

As for barriers on prevention practices, more than half of respondents (67.3%) agree that it is difficult to insist on using condom when a male partner does not want to use condom. 39.1% still agree that it is embarrassing to buy or ask for condoms. These incorrect attitudes leads MSM to increase unsafe sex practices.

Generally, attitudes towards HIV/AIDS and barriers on prevention practices among MSM respondents were good, but there were few minorities of MSM having wrong attitudes in some statements. The reasons for barriers on practices as seeking health services were psychological, including fear of seeking health services (21.3%), concern about discrimination with MSM identity in health facility (14.4%), afraid that their family member may find out their MSM status (37.2%), fear of HIV positive status disclosure (20.8%), embarrassment of going and taking treatment at the clinic (25.1%), experience in discrimination (28.0%), feeling of exclusion from family activities (26.3%), feeling of rejection by friends (16.6%), and afraid of being harassed by someone or arrested by the police (40.3%). These wrong attitudes make some MSM delay to use health services and put them into risky sexual practices. The findings from Zhang, L., et al. (2013) also explained that the top four reasons for barriers to HIV testing fear of knowing a positive result (78.7%), fear of discrimination with HIV positivity (76.7%), unwilling to go an HIV clinic (67.5%), and worry about meeting acquaintances at testing (67.1%) (113). On the other hand, over 80% of the respondents agreed that health care providers are sympathetic and they feel comfortable to keep

using health services in the current health facility. In brief, the most important barriers of MSM to preventive practices were due to psychological, social, and legal issues like fear, worry, embarrassment, discrimination, stigma, and criminalization against MSM in the country.

This study also revealed that there was a strong and positive association between level of attitudes and preventive practices on HIV/AIDS at p-value< 0.05 either in bivariate or multivariate analysis. Majority of the respondents who had positive attitude used good and moderate preventive practices on HIV/AIDS (84.5%), followed by those who had neutral attitude (80.5%), then by those with negative attitude (62.2%). In addition, MSM respondents who had positive attitude were more likely to use preventive practices by 2.63 times than those with negative attitude, and MSM respondents who had neutral attitude were more likely to use preventive practices by 2.18 times than those with negative attitude. In contrast, the findings from Oo, M. Z., (2011) revealed that there was no significant association between attitude and preventive practices like condom use for anal sex with partners in the past 4 months (77). However, respondents with high level of attitude were more likely to use condoms with their partners while respondents with moderate level of attitude was less likely to use condoms with their partners compared to those with low level of attitude.

5.2 Conclusion and Recommendation

The result of this study showed that living with a partner but not married, working as NGO/INGO staffs, sufficient monthly income with saving, Apwint MSM used more good practices on HIV/AIDS prevention although these variables were not associated. The older age group, higher education level, ever tested for HIV/STI, and regularly receiving HIV/STI services in a health facility also used more good practices on HIV/AIDS prevention, moreover, these variables were associated with preventive practices on HIV/AIDS. The result can help the organizations which provides health prevention and promotion services to the MSM community in Yangon, Myanmar.

Recommendation

Although the knowledge and attitudes towards HIV/AIDS has been good among the MSM and associated with practices on HIV prevention in this study, prevention has not been practiced by most. Condom usage, HIV counselling and testing among young MSM should be maintained and encouraged. Also, condom usage among MSM with their steady sexual partners should be encouraged to decrease the risk of sexual transmission of HIV. HIV/AIDS awareness programs, and interventions programs should be improved among those with low level of knowledge and negative attitude. With the aim to increase HIV awareness among MSM, internet-based HIV educational interventions designed to reach MSM in Myanmar should be expanded. In addition, we should expand substantially the provision of condoms and lubricants for MSM to complement the message of behavior change.

Most importantly, the findings from this study can help advocate for and guide the increasing of MSM-friendly HIV prevention and care programs, such as drop-in centers and voluntary testing sites. Further research to address limitations, gaps, poor preventive practices among MSM with low level of knowledge and those with negative attitude identified in this study should be undertaken.

As MSM population are an important target population for a HIV prevention program, we need a better understanding of MSM behavior patterns, risk practices, and improved HIV prevention and control measures. NGOs working with MSM need to organize some interventions focusing on changing the harmful sexual practices into healthy practices. In this case, collaboration between community volunteers and peer outreach workers at MSM hotspots play a very important role in improving the health of MSM community. Further work is needed to reduce barriers related to discrimination and stigma as well as to identify locations where these high-risk MSMs can be accessed. This study was limited to a group of MSM using HIV/STI heath care services at the medical center of Medecins du Monde organization in Yangon, Myanmar, therefore it doesn't represent the whole MSM population in Yangon. The men in this study are more likely to be acknowledged MSM. Moreover, it was a cross-sectional study, so we cannot find the causality of studied factors. Since this research relied on self-report, there was an information bias given by the respondents.

REFERENCES

1. WHO. World Health Organization. Media Center, HIV/AIDS Fact Sheet 2017 2017 [Available from: http://www.who.int/mediacentre/factsheets/fs360/en/.
2. Coovadia HM, Hadingham J. HIV/AIDS: global trends, global funds and delivery bottlenecks. Globalization and health. 2005; 1(1):13.
3. UNAIDS. Ending AIDS: progress towards the 90-90-90 targets, July 2017. 2017.
4. UNAIDS. Global Report: UNAIDS report on the global AIDS epidemic 2010. Geneva, UNAIDS; 2010.
5. UNESCO Bangkok and the Department of Medical Research MOH, Myanmar. Multi-level risk and protective factors and HIV-related risk behaviours among young men who have sex with men (YMSM) in Myanmar, 2015.
6. AVERT. MEN WHO HAVE SEX WITH MEN (MSM), HIV AND AIDS 2017 2017 [Available from: https://www.avert.org/professionals/hiv-social-issues/key-affected-populations/men-sex-men.
7. UNAIDS. UNAIDS Prevention Gap Report, 2016; 2016.
8. Smith AD, Tapsoba P, Peshu N, Sanders EJ, Jaffe HW. Men who have sex with men and HIV/AIDS in sub-Saharan Africa. The Lancet. 2009; 374(9687):416-22.
9. Imrie J, Hoddinott G, Fuller S, Oliver S, Newell M-L. Why MSM in rural South African communities should be an HIV prevention research priority. AIDS and Behavior. 2013; 17(1):70-6.
10. UNAIDS. UNAIDS The Gap Report, 2014; 2014.
11. UNAIDS. Situational Analysis of the HIV Response among Men who have Sex with Men and Transgender Persons in Myanmar, December, 2015; 2015.
12. Coates TJ, Richter L, Caceres C. Behavioural strategies to reduce HIV transmission: how to make them work better. The Lancet. 2008; 372(9639):669-84.
13. Cáceres CF, Konda K, Segura ER, Lyerla R. Epidemiology of male same-sex behaviour and associated sexual health indicators in low-and middle-income countries: 2003–2007 estimates. Sexually transmitted infections. 2008; 84(Suppl 1):i49-i56.

14. NAP. National Strategic Plan on HIV and AIDS 2011-2015. Naypyidaw, Department of Health, Myanmar. 2011.
15. (SEARO) W. HIV/AIDS among Men Who Have Sex with Men and Transgender Populations South-East Asia: The Current Situation and National Responses, New Delhi, World Health Organization, 2010; 2010.
16. Kirby D, Laris B, Rolleri L. Impact of sex and HIV education programs on sexual behaviors of youth in developing and developed countries: Family Health International, YouthNet Program North Carolina; 2005.
17. Crosby R, Graham C, Milhausen R, Sanders S, Yarber W. Condom use to prevent sexually transmitted infections: a global perspective. 2012.
18. Evangeli M, Pady K, Wroe AL. Which psychological factors are related to HIV testing? A quantitative systematic review of global studies. AIDS and behavior. 2016; 20(4):880-918.
19. AIDSdatahub.org. The Integrated biological and behavioural survey (IBBS) of MSM in five cities in Myanmar. Draft-March 2016.
20. Cohen MS, Hellmann N, Levy JA, DeCock K, Lange J. The spread, treatment, and prevention of HIV-1: evolution of a global pandemic. The Journal of clinical investigation. 2008; 118(4):1244-54.
21. UNAIDS. UNAIDS Data Report, 2017; 2017.
22. Baral S, Sifakis F, Cleghorn F, Beyrer C. Elevated risk for HIV infection among men who have sex with men in low-and middle-income countries 2000–2006: a systematic review. PLoS medicine. 2007;4(12):e339.
23. van Griensven F, van Wijngaarden JWdL. A review of the epidemiology of HIV infection and prevention responses among MSM in Asia. Aids. 2010;24:S30-S40.
24. Centre for Health Protection MoH, Hong Kong. HIV Surveillance Report, 2015 UPDATE, Hong Kong. December, 2016; 2016.
25. NACO. National AIDS Control Organization (NACO). HIV sentinel surveillance and HIV estimation in India 2007: a technical brief, New Delhi, 2007.; 2007.

26. Van Griensven F, Varangrat A, Wimonsate W, Tanpradech S, Kladsawad K, Chemnasiri T, et al. Trends in HIV prevalence, estimated HIV incidence, and risk behavior among men who have sex with men in Bangkok, Thailand, 2003–2007. JAIDS Journal of Acquired Immune Deficiency Syndromes. 2010;53(2):234-9.

27. WHO. Strengthening HIV Second Generation Surveillance (SGS) in Myanmar, World Health Organization. 2008.

28. (SEARO) W. Progress Report on HIV in the WHO South-East Asia Region, 2016; 2016.

29. Thwe M. HIV/AIDS education and prevention in Myanmar. AIDS education and prevention: official publication of the International Society for AIDS Education. 2004;16(3 Suppl A):170-7.

30. NAP. Global AIDS Response Progress Report Myanmar, Jan 2014-Dec2014. Naypyitaw, Myanmar: National AIDS Programme, Ministry of Health. 2015b.; 2015.

31. NAP. National AIDS Programme in Myanmar, HIV sentinel Sero-Surveillance Survey (HSS) 2014. Department of Health, Ministry of Health. 2015a.; 2015.

32. Krueger EA, Chiu CJ, Menacho LA, Young SD. HIV testing among social media-using Peruvian men who have sex with men: correlates and social context. AIDS care. 2016; 28(10):1301-5.

33. ECDC. European Centre for Disease Prevention and Control, Techincal Report EMIS (2010): The European Men-Who-Have-Sex-With-Men Internet Survey. 2013.

34. Koblin BA, Husnik MJ, Colfax G, Huang Y, Madison M, Mayer K, et al. Risk factors for HIV infection among men who have sex with men. Aids. 2006; 20(5):731-9.

35. Baggaley R, Armstrong A, Dodd Z, Ngoksin E, Krug A. Young key populations and HIV: a special emphasis and consideration in the new WHO Consolidated Guidelines on HIV Prevention, Diagnosis, Treatment and Care for Key Populations. Journal of the International AIDS Society. 2015; 18(2S1).

36. NAP. National Strategic Plan on HIV and AIDS 2016-2020. Deparment of Public Health, Ministry of Health and Sports of Myanmar; 2016.

37. Aung T, Thein ST, McFarland W. Seroadaptive behaviors of men who have sex with men in Myanmar. AIDS and Behavior. 2016; 20(12):2827-33.

38. NAP. Global AIDS Response Progress Report Myanmar Jan 2012-Dec 2013. Naypyitaw, Myanmar: National AIDS Program, Ministry of Health.; 2014.

39. Medecins du Monde M. 2017

Available from: https://www.medecinsdumonde.org/en/countries/asia/myanmar.

40. WHO. Prevention and treatment of HIV and other sexually transmitted infections among men who have sex with men and transgender people; 2011.

41. Radcliffe J, Doty N, Hawkins LA, Gaskins CS, Beidas R, Rudy BJ. Stigma and sexual health risk in HIV-positive African American young men who have sex with men. AIDS patient care and STDs. 2010;24(8):493-9.

42. Villes V, Spire B, Lewden C, Perronne C, Besnier J-M, Garré M, et al. The effect of depressive symptoms at ART initiation on HIV clinical progression and mortality: implications in clinical practice. Antiviral therapy. 2007;12(7):1067.

43. Ford N, Shubber Z, Meintjes G, Grinsztejn B, Eholie S, Mills EJ, et al. Causes of hospital admission among people living with HIV worldwide: a systematic review and meta-analysis. The Lancet HIV. 2015;2(10):e438-e44.

44. Catalan J, Harding R, Sibley E, Clucas C, Croome N, Sherr L. HIV infection and mental health: suicidal behaviour–systematic review. Psychology, health & medicine. 2011;16(5):588-611.

45. Count YV. Policy Brief: Self-stigma among young men who have sex with men and transgender women and the linkages with HIV in Asia, Bangkok: Youth Voices Count.; 2013.

46. Heijnders M, Van Der Meij S. The fight against stigma: an overview of stigma-reduction strategies and interventions. Psychology, health & medicine. 2006;11(3):353-63.

47. Gu J, Lau JT, Wang Z, Wu AM, Tan X. Perceived empathy of service providers mediates the association between perceived discrimination and behavioral intention to take up HIV antibody testing again among men who have sex with men. PLoS One. 2015;10(2):e0117376.

48. Lau J, Lin C, Hao C, Wu X, Gu J. Public health challenges of the emerging HIV epidemic among men who have sex with men in China. Public health. 2011;125(5):260-5.

49. Genberg BL, Kawichai S, Chingono A, Sendah M, Chariyalertsak S, Konda KA, et al. Assessing HIV/AIDS stigma and discrimination in developing countries. AIDS and Behavior. 2008;12(5):772-80.

50. Lee SJ, Li L, Iamsirithaworn S, Khumtong S. Disclosure challenges among people living with HIV in Thailand. International journal of nursing practice. 2013;19(4):374-80.

51. Li L, Lee S-J, Thammawijaya P, Jiraphongsa C, Rotheram-Borus MJ. Stigma, social support, and depression among people living with HIV in Thailand. AIDS care. 2009;21(8):1007-13.

52. Tangmunkongvorakul A, Chariyalertsak S, Amico KR, Saokhieo P, Wannalak V, Sangangamsakun T, et al. Facilitators and barriers to medication adherence in an HIV prevention study among men who have sex with men in the iPrEx study in Chiang Mai, Thailand. AIDS care. 2013;25(8):961-7.

53. Chan KY, Reidpath DD. Stigmatization of patients with AIDS: Understanding the interrelationships between Thai nurses' attitudes toward HIV/AIDS, drug use, and commercial sex. AIDS patient care and STDs. 2007;21(10):763-75.

54. Trinidad AC, Quinto Jr DO, Naldoza RS. The Experience of External and Internal Stigma of HIV Positive Filipinos. Philippine Population Review. 2012;10.

55. Index S. Report on Stigma Index. Vietnam National Network of People living with HIV (VNP+), Vietnam. 2015.

56. Pham MD, Aung PP, Paing AK, Pasricha N, Agius PA, Tun W, et al. Factors associated with HIV testing among young men who have sex with men in Myanmar: a cross-sectional study. Journal of the International AIDS Society. 2017;20(3).

57. Pulerwitz J, Michaelis A, Weiss E, Brown L, Mahendra V. Reducing HIV-related stigma: lessons learned from Horizons research and programs. Public Health Reports. 2010;125(2):272-81.

58. Zou H, Hu N, Xin Q, Beck J. HIV testing among men who have sex with men in China: a systematic review and meta-analysis. AIDS and behavior. 2012;16(7):1717-28.

59. Risher K, Adams D, Sithole B, Ketende S, Kennedy C, Mnisi Z, et al. Sexual stigma and discrimination as barriers to seeking appropriate healthcare among men who have sex with men in Swaziland. Journal of the International AIDS Society. 2013;16(3S2).

60. Li MJ, Murray JK, Suwanteerangkul J, Wiwatanadate P. Stigma, social support, and treatment adherence among HIV-positive patients in Chiang Mai, Thailand. AIDS Education and Prevention. 2014;26(5):471-83.

61. UNAIDS. National HIV Legal Review Report. Yangon, Myanmar: UNAIDS, 2014.; 2014.

62. Kabiru CW, Beguy D, Crichton J, Zulu EM. HIV/AIDS among youth in urban informal (slum) settlements in Kenya: What are the correlates of and motivations for HIV testing? BMC Public Health. 2011;11(1):685.

63. Misiri H, Muula AS. Attitudes towards premarital testing on human immunodeficiency virus infection among Malawians. Croat Med J. 2004;45(1):84-7.

64. Nwachukwu CE, Odimegwu C. Regional patterns and correlates of HIV voluntary counselling and testing among youths in Nigeria. African journal of reproductive health. 2011;15(2).

65. Li R, Pan X, Ma Q, Wang H, He L, Jiang T, et al. Prevalence of prior HIV testing and associated factors among MSM in Zhejiang Province, China: a cross-sectional study. BMC public health. 2016;16(1):1152.

66. Mansergh G, Naorat S, Jommaroeng R, Jenkins RA, Stall R, Jeeyapant S, et al. Inconsistent condom use with steady and casual partners and associated factors among sexually-active men who have sex with men in Bangkok, Thailand. AIDS and Behavior. 2006;10(6):743-51.

67. Larmarange J, Wade AS, Diop AK, Diop O, Gueye K, Marra A, et al. Men who have sex with men (MSM) and factors associated with not using a condom at last sexual intercourse with a man and with a woman in Senegal. PLoS One. 2010;5(10):e13189.

68. Choi K-H, Gibson DR, Han L, Guo Y. High levels of unprotected sex with men and women among men who have sex with men: a potential bridge of HIV transmission in Beijing, China. AIDS education and Prevention. 2004;16(1: Special issue):19-30.

69. Folch C, Marks G, Esteve A, Zaragoza K, Muñoz R, Casabona J. Factors associated with unprotected sexual intercourse with steady male, casual male, and female partners among men who have sex with men in Barcelona, Spain. AIDS Education & Prevention. 2006;18(3):227-42.

70. Hernandez AL, Lindan CP, Mathur M, Ekstrand M, Madhivanan P, Stein ES, et al. Sexual Behavior Among Men Who have Sex with Women, Men, and Hijras in Mumbai, India—Multiple Sexual Risks. AIDS and Behavior. 2006;10(1):5-16.

71. Chow EPF, Wilson DP, Zhang J, Jing J, Zhang L. Human immunodeficiency virus prevalence is increasing among men who have sex with men in China: findings from a review and meta-analysis. Sexually transmitted diseases. 2011;38(9):845-57.

72. Lau JT, Wang M, Wong HN, Tsui HY, Jia M, Cheng F, et al. Prevalence of bisexual behaviors among men who have sex with men (MSM) in China and associations between condom use in MSM and heterosexual behaviors. Sexually transmitted diseases. 2008;35(4):406-13.

73. Le TMD, Lee PC, Stewart DE, Long TN, Quoc CN. What are the risk factors for HIV in men who have sex with men in Ho Chi Minh City, Vietnam?-A cross-sectional study. BMC public health. 2016;16(1):406.

74. Chow EP, Chen X, Zhao J, Zhuang X, Jing J, Zhang L. Factors associated with self-reported unprotected anal intercourse among men who have sex with men in Changsha city of Hunan province, China. AIDS care. 2015;27(10):1332-42.

75. Johnston LG, Steinhaus MC, Sass J, Sirinirund P, Lee C, Benjarattanaporn P, et al. Recent HIV testing among young men who have sex with men in Bangkok and Chiang Mai: HIV testing and prevention strategies must be enhanced in Thailand. AIDS and Behavior. 2016;20(9):2023-32.

76. Wimonsate W, Naorat S, Varangrat A, Phanuphak P, Kanggarnrua K, McNicholl J, et al. Factors associated with HIV testing history and returning for HIV test results among men who have sex with men in Thailand. AIDS and Behavior. 2011;15(4):693-701.

77. Oo MZ. Factors related to unprotected sex in men having sex with men (MSM) in Mandalay, Myanmar: Chulalongkorn University; 2011.

78. Yi S, Tuot S, Chhoun P, Brody C, Pal K, Oum S. Factors associated with recent HIV testing among high-risk men who have sex with men: a cross-sectional study in Cambodia. BMC public health. 2015;15(1):743.

79. Knox J, Sandfort T, Yi H, Reddy V, Maimane S. Social vulnerability and HIV testing among South African men who have sex with men. International journal of STD & AIDS. 2011;22(12):709-13.

80. Beyrer C, Baral SD, Van Griensven F, Goodreau SM, Chariyalertsak S, Wirtz AL, et al. Global epidemiology of HIV infection in men who have sex with men. The Lancet. 2012;380(9839):367-77.

81. Ma X, Zhang Q, He X, Sun W, Yue H, Chen S, et al. Trends in prevalence of HIV, syphilis, hepatitis C, hepatitis B, and sexual risk behavior among men who have sex with men: results of 3 consecutive respondent-driven sampling surveys in Beijing, 2004 through 2006. JAIDS Journal of Acquired Immune Deficiency Syndromes. 2007;45(5):581-7.

82. Veras MAdSM, Calazans GJ, de Almeida Ribeiro MCS, de Freitas Oliveira CA, Giovanetti MR, Facchini R, et al. High HIV prevalence among men who have sex with men in a time-location sampling survey, São Paulo, Brazil. AIDS and Behavior. 2015;19(9):1589-98.

83. Oldenburg CE, Perez-Brumer AG, Reisner SL, Mimiaga MJ. Transactional sex and the HIV epidemic among men who have sex with men (MSM): results from a systematic review and meta-analysis. AIDS and Behavior. 2015;19(12):2177-83.

84. Nguyen TA, Nguyen HT, Le GT, Detels R. Prevalence and risk factors associated with HIV infection among men having sex with men in Ho Chi Minh City, Vietnam. AIDS and Behavior. 2008;12(3):476-82.

85. Wu Z, Xu J, Liu E, Mao Y, Xiao Y, Sun X, et al. HIV and syphilis prevalence among men who have sex with men: a cross-sectional survey of 61 cities in China. Clinical infectious diseases. 2013;57(2):298-309.

86. Xu J-J, Zhang M, Brown K, Reilly K, Wang H, Hu Q, et al. Syphilis and HIV seroconversion among a 12-month prospective cohort of men who have sex with men in Shenyang, China. Sexually transmitted diseases. 2010;37(7):432.

87. Mmbaga E, Dodo M, Leyna G, Moen K, Leshabari M. Sexual practices and perceived susceptibility to HIV infection among men who have sex with men in Dar Es Salaam, mainland Tanzania. Journal of AIDS and Clinical Research. 2011(Suppl. 1).

88. Durex. Global sex Survey Report. 2005.

89. Sohn A, Cho B. Knowledge, attitudes, and sexual behaviors in HIV/AIDS and predictors affecting condom use among men who have sex with men in South Korea. Osong public health and research perspectives. 2012;3(3):156-64.

90. Muangpratade K. Steer Peer Mobilizer (SPM) model for HIV/AIDS risk reduction among Men who have Sex with Men (MSM) in MSM hotspots, Chiang Mai province: Chulalongkorn University; 2011.

91. Bakai TA, Ekouevi DK, Tchounga BK, Balestre E, Afanvi KA, Goilibe KB, et al. Condom use and associated factors among men who have sex with men in Togo, West Africa. Pan African Medical Journal. 2016;23(1).

92. Xu J-J, Reilly KH, Lu C-M, Ma N, Zhang M, Chu Z-X, et al. A cross-sectional study of HIV and syphilis infections among male students who have sex with men (MSM) in northeast China: implications for implementing HIV screening and intervention programs. BMC Public Health. 2011;11(1):287.

93. Rongkavilit C, Wright K, Chen X, Naar-King S, Chuenyam T, Phanuphak P. HIV stigma, disclosure and psychosocial distress among Thai youth living with HIV. International journal of STD & AIDS. 2010;21(2):126-32.

94. Mor Z, Turner D, Livnat Y, Levy I. HIV infected men who have sex with men in Israel: knowledge, attitudes and sexual behavior. BMC infectious diseases. 2017;17(1):679.

95. WHO. The World Health Organization (WHO) bio-behavioural survey guidelines for populations at risk for HIV 2017, supplemental material. 2017.

96. Carey MP, Schroder KE. Development and psychometric evaluation of the brief HIV Knowledge Questionnaire. AIDS education and prevention. 2002;14(2):172-82.

97. Carey MP, Morrison-Beedy D, Johnson BT. The HIV-Knowledge Questionnaire: Development and evaluation of a reliable, valid, and practical self-administered questionnaire. AIDS and Behavior. 1997;1(1):61-74.

98. Bengtsson L, Thorson A, Thanh VPN, Allebeck P, Popenoe R. Sexual relationships among men who have sex with men in Hanoi, Vietnam: a qualitative interview study. BMC public health. 2013;13(1):108.

99. Vutthikraivit P, Lertnimitr B, Chalardsakul P, Imjaijitt W, Piyaraj P. Prevalence of HIV testing and associated factors among young men who have sex with men (MSM) in Bangkok, Thailand. J Med Assoc Thai. 2014;97(suppl 2):S207-13.

100. Aung T, McFarland W, Paw E, Hetherington J. Reaching men who have sex with men in Myanmar: population characteristics, risk and preventive behavior, exposure to health programs. AIDS and Behavior. 2013;17(4):1386-94.

101. Sirivongrangson P, Lolekha R, Charoenwatanachokchai A, Siangphoe U, Fox KK, Jirarojwattana N, et al. HIV risk behavior among HIV-infected men who have sex with men in Bangkok, Thailand. AIDS Behav. 2012;16(3):618-25.

102. Inoue Y, Yamazaki Y, Kihara M, Wakabayashi C, Seki Y, Ichikawa S. The intent and practice of condom use among HIV-positive men who have sex with men in Japan. AIDS Patient Care STDS. 2006;20(11):792-802.

103. Weiss KM, Jonas KJ, Guadamuz TE. Playing and Never Testing: Human Immunodeficiency Virus and Sexually Transmitted Infection Testing Among App-Using MSM in Southeast Asia. Sexually Transmitted Diseases. 2017;44(7):406-11.

104. Zhou J, Chen J, Goldsamt L, Wang H, Zhang C, Li X. HIV Testing and Associated Factors Among Men Who Have Sex with Men in Changsha, China. The Journal of the Association of Nurses in AIDS Care : JANAC. 2018.

105. NAP. National AIDS Program in Myanmar, Progress Report 2015, National Strategic Plan for HIV/AIDS in Myanmar.; 2015.

106. Phanuphak N, Teeratakulpisarn N, Pankam T, Kerr SJ, Barisri J, Deesua A, et al. Anal human papillomavirus infection among Thai men who have sex with men with and without HIV infection: prevalence, incidence, and persistence. Journal of acquired immune deficiency syndromes (1999). 2013;63(4):472.

107. Nyoni JE, Ross MW. Condom use and HIV-related behaviors in urban Tanzanian men who have sex with men: a study of beliefs, HIV knowledge sources, partner interactions and risk behaviors. AIDS care. 2013;25(2):223-9.

108. Figueroa JP, Cooper CJ, Edwards JK, Byfield L, Eastman S, Hobbs MM, et al. Understanding the high prevalence of HIV and other sexually transmitted infections among socio-economically vulnerable men who have sex with men in Jamaica. PLoS One. 2015;10(2):e0117686.

109. Xiao C, Wang W, Cao Y, Yan H, Li S, Li J, et al. The influence of condom use during the first-time anal intercourse on the subsequent sexual behaviors among young men who have sex with men in China. Biomedical Research. 2017;28(19).

110. Li R, Wang H, Pan X, Ma Q, Chen L, Zhou X, et al. Prevalence of condomless anal intercourse and recent HIV testing and their associated factors among men who have sex with men in Hangzhou, China: A respondent-driven sampling survey. PloS one. 2017;12(3):e0167730.

111. Mor Z, Davidovich U, Bessudu-Manor N, McFarlane M, Feldshtein G, Chemtob D. High-risk behaviour in steady and in casual relationships among men who have sex with men in Israel. Sex Transm Infect. 2011;87(6):532-7.

112. Newman PA, Lee SJ, Roungprakhon S, Tepjan S. Demographic and behavioral correlates of HIV risk among men and transgender women recruited from gay entertainment venues and community-based organizations in Thailand: implications for HIV prevention. Prevention science : the official journal of the Society for Prevention Research. 2012;13(5):483-92.
113. Zhang L, Xiao Y, Lu R, Wu G, Ding X, Qian H-z, et al. Predictors of HIV testing among men who have sex with men in a large Chinese city. Sexually transmitted diseases. 2013;40(3):235.

APPENDIX

APPENDIX A: Questionnaire

Part -1

Socio-Demographic Characteristics

Participant's ID……. Date……

Please mark (√) into the gap or add the actual text into the gap.

1. Age ……..years

2. What is your current Marital Status?
   - (1) ☐ Never married
   - (2) ☐ Formally married
   - (3) ☐ Live in with a partner but not married

3. What is the highest level of education you attended?
   - (1) ☐ Primary school
   - (2) ☐ Secondary school
   - (3) ☐ High school
   - (4) ☐ University graduate

4. What is your occupational status?
   - (1) ☐ Private/Government employee
   - (2) ☐ NGO/INGO staff
   - (3) ☐ Own business
   - (4) ☐ Work in the fashion sector (Hair style, Make-up, Dress designer)
   - (5) ☐ Natkataw (Spirit medium)
   - (6) ☐ Others (Specify)……..

5. What is your monthly income (MMK)?

   (1) ☐ Sufficient (2) ☐ Not Sufficient (3) ☐ Have Saving

6. What is your current living condition?
   (1) ☐ Almost living alone
   (2) ☐ With parents
   (3) ☐ With wife
   (4) ☐ With a male partner
   (5) ☐ With friends

7. Would you describe yourself as :
   (1) ☐ Apone (Masculine MSM)
   (2) ☐ Apwint (Feminine MSM)
   (3) ☐ Tha Nge (Bisexual MSM)
   (4) ☐ Others (please specify)……

8. Have you ever tested for HIV?
   (1) ☐ Yes (2) ☐ No (If No, skip to No.10)

9. If yes, what is your HIV test result?
   (1) ☐ HIV positive (2) ☐ HIV negative (3) ☐ Undisclosed

10. Have you ever received a sexually transmitted infection check-up in the last 12 months?
   (1) ☐ Yes (2) ☐ No (If No, skip to No.12)

11. Did a healthcare provider tell you that you had a sexually transmitted disease, other than HIV in the last 12 months?
   (1) ☐ Yes (2) ☐ No

12. Currently, are you regularly receiving HIV/STI-related health care services (eg. HIV testing and counselling/ Syphilis testing) in Medecins du Monde organization?
   (1) ☐ Yes (2) ☐ No

Part -2

History of sexual activities

1. When you had first sex with anyone, was this partner a male or female?

   (1) ☐ Male (2) ☐ Female

2. How old were you when you first had anal sex with a man?

   …….. Years

3. Did you use a condom at first anal sex with a man?

   (1) ☐ Yes (2) ☐ No

4. Did you pay or give him any presents to have sex at first anal sex with a man?

   (1) ☐ Yes (2) ☐ No

5. Did he pay you or give you any presents in exchange for sex at first anal sex with a man?

   (1) ☐ Yes (2) ☐ No

6. Have you ever had vaginal sex?

   (1) ☐ Yes (2) ☐ No

7. During the past 3 months, did you have a steady sexual partner?

   (Steady sexual partner: a partner someone has sex with, and are committed to, for example, spouse, live-in sex partner, or boyfriend.)

   (1) ☐ Yes (2) ☐ No

8. Is this your steady sexual partner?

   (1) ☐ Male (2) ☐ Female

9. Do you have oral sex with this partner?

   (1) ☐ Yes (2) ☐ No

10. Did you have anal sex with this partner?

    (1) ☐ Yes (2) ☐ No

NOTE: the following questions will only appear if the respondent has casual partners

11. During the last 3 months, did you have any casual partner?

(A casual partner: a partner someone has sex with but don't feel committed to)

(1) ☐ Yes

(2) ☐ No

12. Is this your causal partner?

(1) ☐ Male (2) ☐ Female

13. Do you have oral sex with this partner?

(1) ☐ Yes (2) ☐ No

14. Did you give or receive any presents to have sex with casual partner(s)?

(1) ☐ Yes, I gave

(2) ☐ Yes, I received.

(3) ☐ Yes, I not only gave but also received.

(4) ☐ None of the above

15. Did you have sex with any male who gave you money for sex in the last 3 months?

(1) ☐ Yes (2) ☐ No

16. Did you use condoms the last time you had sex with any male partners who gave you money?

(1) ☐ Yes (2) ☐ No

Part-3

Knowledge on HIV/AIDS, transmission, prevention, and information

For each statement, please mark (√) into the gap that you think the most accurate. If answer is correct, it is equal to one, and if it is incorrect, or don't know, it is equal to zero.

No.	Statement	Correct	Incorrect	Don't Know
	Knowledge on HIV/AIDS			
1	HIV/AIDS is a contagious disease.			
2	There is a cure for HIV/AIDS. (-)ve			
3	HIV/AIDS occurs only among MSM. (-)ve			
4	A person with HIV can look and feel healthy.			
5	People who have been infected with HIV quickly show serious signs of being infected. (-)ve			
6	A person can be infected with HIV for 5 years or more without getting AIDS.			
7	There is a vaccine that can stop adults from getting HIV. (-)ve			
8	Some drugs have been made for the treatment of HIV/AIDS.			
	Knowledge on HIV/AIDS transmission			
9	Coughing and sneezing DO NOT spread HIV.			
10	HIV can be spread by mosquitoes. (-)ve			
11	A person can get HIV by sharing a glass of water with someone who has HIV. (-)ve			
12	A person can get HIV by getting an injection from a needle that was already used by someone else.			

13	It is possible to get HIV/AIDS by having sex with a healthy looking person.			
14	A person can get HIV through contact with saliva, tears, sweat, or urine. (-)ve			
15	It is possible to get HIV from anal sex without condom use.			
16	Having sex without condom use only once will not infect a person with HIV/AIDS. (-)ve			
17	HIV/AIDS can be transmitted by transfusion of blood.			
	Knowledge on HIV/AIDS prevention			
18	Having sex with more than one partner can increase a person's chance of being infected with HIV.			
19	There is no need to use condom with a steady partner. (-)ve			
20	A person can protect himself form HIV by using condom correctly every time they have sex.			
21	A person can protect himself from HIV by having one uninfected faithful sex partner.			
22	The blood test for HIV is a very good way to find out if you have HIV.			
23	Taking a test for HIV one week after having sex will tell a person if he has HIV. (-)ve			
24	Eating healthy foods can keep a person from getting HIV. (-)ve			
25	Taking vitamins keeps a person from getting HIV. (-)ve			

	Information on HIV/AIDS			
26	There are the organizations that provide free HIV/AIDS related health services for MSM.			
27	A person can get HIV related health information through media, health talk, peer educators, and health staff.			

Part - 4

Attitude towards HIV/AIDS, and Barriers on HIV preventive practices

Please mark (√) in the box that matches the ideas and feeling of yours.
Strongly agree means that respondents agree with the question significantly. (SA)
Agree means that respondents agree with the question. (A)
Unsure means that respondents are not sure about the question. (US)
Disagree means that respondents disagree with the question. (DA)
Strongly disagree means that respondents disagree with the question significantly. (SDA)

No	Statement	SA	A	US	DA	SDA
	Attitude towards HIV/AIDS					
1	AIDS is a serious health problem among men who have sex with men.					
2	HIV/AIDS has severe health consequences.					
3	It is possible that I might get HIV/AIDS.					
4	The risk that I will get HIV/AIDS is high.					
5	I will feel depress when I have HIV. (-)ve					

	Attitude towards Barriers on HIV preventive practices					
6	I find it difficult to insist on using condom when a male partner does not want to use condom. (-)ve					
7	It is embarrassing to buy or ask for condoms. (-)ve					
8	I am not ashamed to say I am MSM in a gathering with other people who are MSM.					
9	I am not ashamed to say I am MSM when I meet with a health care worker who works in my community.					
10	I have ever felt afraid to seek health services because I am worried someone may learn I am MSM. (-)ve					
11	I have ever avoided going to a health care facility because I am worried that the service provider would treat me differently if they found out I am MSM. (-)ve					
12	I feel uncomfortable accessing health services because I am afraid that my family/wife/partner may find out I am MSM. (-)ve					
13	I delay to go to a health care facility because I fear disclosure of HIV positive status.(-)ve					
14	I feel embarrassed to go and take treatment at the clinic when I have HIV. (-)ve					
15	I have experienced discrimination from other people because I am MSM. (-)ve					
16	I have ever felt excluded from family activities because I am MSM. (-)ve					
17	I have ever felt that I have been rejected by friends. (-)ve					

18	I am afraid of being harassed by someone or arrested by the police for engaging in same sex practices. (-)ve					
19	Health care providers are sympathetic when I share my feelings and problems with them.					
20.	I feel comfortable to come back and continue receiving health services from my current facility.					

Part-5

Preventive practices on HIV/AIDS

For each statement please check in any one blank space (√) for Always, Sometimes, or Never for during past three months.

No.	Statement	Always	Sometimes	Never
1	I used condoms at last sex.			
2	I used condoms with my steady sexual partner. (A steady sexual partner is someone you are committed to, for example spouse, live-in sex partner, or boyfriend. There is no payment or exchange of goods or services for sex with these partners.)			
3	I used condoms when I had anal sex with my male partner(s).			
4	I had sex with sex worker(s) using condoms.			
5	I had sex with acquaintance(s) using condoms.			
6	I used lubricants during anal sex.			

7	I only had sex with my steady sexual partner. (A steady sexual partner: a partner someone has sex with, and are committed to, for example spouse, live-in sex partner, or boyfriend)			
8	I had sex with other people during the time I were having a sexual relationship with my steady partner. (-)ve			
9	I had sex with causal sexual partner(s) on more than one occasion. (-)ve (A causal sexual partner: a partner someone has sex with, but don't feel committed to.)			
10	I visited an MSM-friendly center or clinic to receive HIV counselling and testing.			
11	I had ever been counselled for HIV.			
12	I had ever been tested for HIV.			
13	I have had in touch with a peer educator for HIV testing and counselling.			
14	With my steady sexual partner, I ever disclosed each other's HIV status.			

APPENDIX B

Administration and Time schedule

Research Process/Activity	Time Frame (Month) Oct 2017 - July 2018													
	Oct	Nov	Dec	Jan		Feb		Mar		Apr		May	June	July
Literature review														
Writing Thesis Proposal														
Consulting with Advisor														
Formatting of measurement tools (questionnaire)														
Submission Proposal Exam														
Proposal exam														
Pre-test Questionnaire														
Ethical Consideration from Chulalongkorn University														
Field preparation and Data collection														
Data analysis														
Thesis Writing														
Thesis Defense Final Exam														
Submitting Final Thesis														

APPENDIX C

Budget Estimation

	Description	Unit Price (Baht)
1	Procurement	
1.1	Printing Questionnaires and Consents	3,000
1.2	Purchasing Stationary	500
2	Survey Management Cost	
2.1	Go and Back to Yangon, Myanmar	6000
2.2	Advocacy with authorities	2000
2.3	Transportation Cost to the site	2000
2.4	Pretest (800 Bahts/day)	800
2.5	Honorarium for three researach assistants	12,000
2.6	Meal for authorities and research assistants	5000
2.7	Miscellaneous	2500
3	Preparation and Completion of Thesis Paper	
3.1	Publication	2500
	Total	36300

VITA

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Education Background: B. Med. Tech (Medical Laboratory) (Mandalay)

Graduated from The University of Medical Technology, Mandalay, Myanmar in 2009

Educational Qualification:

1. Certification in Organizational Development for Civil Society Organization The US Embassy American Centre, Yangon, (Term-1, 2017)
2. Certification in Office Management Training (Batch-17), UMFCCI, Yangon (2015)
3. Certification in Advanced Training on Human Rights Defender, (2012) Actionaid, Yangon, Myanmar.

Working Experiences:

1. Medical laboratory Technologist for HIV/AIDS program in MEDECINS DU MONDE Organizatoin,Myanmar (Jan 2014 – July 2015).
2. Medical laboratory Technologist for HIV/AIDS program in MEDICAL ACTION MYANMAR Organizatoin, Myanmar (Oct 2012 – Dec 2013).
3. Medical laboratory Technologist in NATIONAL HEART AND LUNG CENTRE, Yangon, Myanmar (April 2011 – September 2012).