THE RELATIONSHIP OF SUBSTANCE USE TO RISK BEHAVIOR OF HIV/AIDS AMONG YOUTH IN YANGON, MYANMAR

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ABSTRACT

Risky behaviors regarding HIV/AIDS have received increasing attention during the last few decades. Many young adults, despite widespread prevention and education efforts that target this age group, engage in behaviors that place them at risk of HIV infection. These behaviors include frequent experimentation with alcohol and other drugs and unprotected sex. The combination of these risky behaviors causes increased concern about the spread of HIV among this age group. This study was conducted to identify factors related to substance use and the relationship between substance use and risky behavior of HIV/AIDS of youth, in Yangon, Myanmar. The relationship of the use of alcohol and drugs in conjunction with the use of condoms was examined among 380 university students who were studying in Dagon University, in Yangon, Myanmar.

Of 380 university students, 9.12% used both alcohol and psychoactive drugs. 38.95% stated that they drank alcohol and 9.74% were psychoactive drug users. 14.21% of the university students had sexual experiences and 75.93% of them reported that they had had only one sexual partner. The proportion of consistent condoms use with husband/wife or boyfriend/girlfriend was not satisfactory (33.33%). However, consistent condom use was high while having sex with commercial sex workers (80%). In bivariate analyses, the university students who consumed alcohol or used psychoactive drugs were more likely to have unprotected sex than the university students who did not used these substances. Multivariate analyses for risk behavior of HIV/AIDS suggest that the university students who used both alcohol and drugs were more likely to engage in riskier sex (OR= 5.84, CI=2.17-15.69).

Substance use was significantly associated with risky sexual behavior of HIV/AIDS among university students in Yangon, Myanmar. Results indicate that interventions that lower alcohol/drug use might decrease levels of high risk sexual behavior. Thus, interventions aimed at reducing alcohol consumption and reducing psychoactive drug use might be important for slowing the rate of HIV and saving persons from great suffering and saving the resources of society.

KEY WORDS: SUBSTANCE USE/ RISK BEHAVIOR OF HIV/AIDS/ YOUTH

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AIDS	:	Acquired Immunodeficiency Syndrome
ATS	:	Amphetamine Type Stimulant
CI	:	Confident Interval
CSW	:	Commercial Sex Worker
HBM	:	Health Belief Model
HIV	:	Human Immunodeficiency Virus
IDU	:	Injecting Drug User
OR	:	Odd ratio
STD	:	Sexually Transmitted Disease
STI	:	Sexually Transmitted Infection
WHO	:	World Health Organization

CHAPTER I
INTRODUCTION

1.1 Rationale and justification

Youth represent the future of every society and also a great resource of the nation. To build our world with a brighter future, young people play a crucial role in its construction. According to the World Health Organization (WHO), all persons between the ages of 15 to 24 years are youth (1). Youth is a time of transition from childhood dependence to adult independence, a time when the past is questioned and the future is being determined, a time of searching and exploring new ideas and behaviors that will shape their lives and their future (2).

As we enter the new millennium, the number of young people has become alarming. Nowadays, more than half of the world's population is under 25 years old (3). Eighty five percent of them live in developing countries (2). In Myanmar, youth (15-24) comprise 9.41 million of the total population of 56.5 million (4).

The number of young people is rapidly increasing in the world and they need special attention in terms of their reproductive health necessities (5). Moreover, in most societies, the health of the young people has been neglected because they are traditionally healthier and less vulnerable to disease than other age cohorts. Their health needs are often given low priority. However, in reality, the young are highly vulnerable to the profound changes in the society and environment which have had an impact on sexual and reproductive health behavior and its consequences (2). It is obvious that social and economic changes, including urbanization, industrialization, migration, mass media and education, have eliminated many of the traditional

constraints on early sexual activity outside marriage. In addition, there is a clear trend among young men and women to marry later in their lives; sexual relations prior to marriage are on the rise. Moreover, the period of exposure to sexual activities also becomes longer because the average age at menarche continues to decline and increasing exposure to the risks of unwanted pregnancy, unsafe abortion, and STDs including HIV which in turn increase the risks to their reproductive health and well-being (6).

Young people today, as they pass through physical changes related to human reproduction, need information and opportunities to discuss sexuality in a safe and open way (7). They have a right to access complete and detailed knowledge and information related to their development, health and sensitive sexual issues (2). Unfortunately, the needs of young people are often only recognized when it is too late. So, it is important to implement effective intervention measures before they are faced with a worst situation (8). Thus, meeting the needs of youth requires not only providing services, but also changing attitudes, overcoming community opposition, building understanding and educating adults about young people's reproductive health needs (9).

It is widely known that youth is a period of foundation for adult life. Risk behaviors that they adopt during these years may affect not only their life time but also the surrounding in which they live. Thus, helping young people to develop healthy behaviors, and providing them with appropriate information and care are key investments in their future (10).

According to WHO, 45 million people will be infected with HIV in the year 2010 if there is no successful expanded global prevention effort. For the prevention and control measures, the level of knowledge about modes of infection and how to prevent them must be high enough in the population. Better knowledge about the disease will help avoid risky behaviors and the chance of transmission of infection. It is also important to know the extent to which alcohol and drugs affect the transmission of HIV by sexual intercourse.

The HIV epidemic in Myanmar is concentrated, with HIV transmission primarily occurring in high risk sexual contacts between sex workers and their clients, men who have sex with men and the sexual partners of these sub-populations. In addition, there is a high level of HIV transmission among injecting drug users through use of contaminated injecting equipment, with transmission to sexual partners. It is estimated that around 238,000 people are living with HIV in Myanmar in 2007. In the same year, an estimated 17,000 people died of AIDS-related illness. Incidence is estimated at well above 10,000 new infections per year, confirming the continuing need for effective prevention efforts, with increased emphasis on reaching long term female sexual partners of male most at risk populations (11).

Youth are one of these risky populations. They are more likely to have risk behavior such as multiple sexual partners and most of them are sexually active age group. Sexual activity is often initiated, risk-taking and experimentation are normative, and many sexually active persons fail to take appropriate prevention precautions, despite basic knowledge of HIV transmission and prevention. Using alcohol and drugs can impair judgment and increase potential for high-risk behaviors.

People who abuse alcohol are more likely to engage in high risk-sexual behaviors and injecting dug use. A history of heavy alcohol use has been correlated with a lifetime tendency towards high-risk sexual behaviors, including multiple sex partners, unprotected intercourse, and sex with high-risk partners (e.g., IDUs, prostitutes) and the exchange of sex for money or drugs (12).

Drug use other than by injection (non-IDU) has been increasingly recognized as a major risk factor in the transmission of HIV for its potential indirect effects, although this association has received considerably less attention. Non-IDU has the potential to decrease sexual inhibitions and affect judgments about sexual partners or practices. Further, the use of non injection drugs is often associated with an increase in the number of sex partners, inconsistent condom use and trading sex for dugs (13).

Many studies relating knowledge, attitudes and behavior to HIV/AIDS have been done among various groups such as sexually transmitted infection (STI) patients, commercial sex workers (CSWs), taxi drivers, pregnant women, university students, etc. Understanding the knowledge, attitudes and behavior of a particular group can be a useful tool in the prevention and control of HIV/AIDS. In addition impulsive sexual behavior and non-use of contraceptives are sometimes exacerbated by alcohol and psychoactive drugs use. (6). Studying substance use and sexual risk behavior of HIV/AIDS among youth may contribute some useful information in HIV/AIDS prevention and control activities in Myanmar.

1.2 Research Objectives

1.2.1 Research question

What is the association between substance use and risk behavior of HIV/AIDS among youth in Yangon, Myanmar?

1.2.2 General Objective

To identify factors related to substance use and the relationship between substance use and risk behavior with regard to HIV infection among youth in Myanmar.

1.2.3 Specific Objectives

(a) To identify the risk behaviors of youth regarding HIV/AIDS.

(b) To describe the prevalence of substance use among youth in Myanmar.

(c) To identify the socio-demographic characteristics of youth, social factors, the level of knowledge and perceptions of substance use which affect risk behavior regarding HIV/AIDS, and knowledge and perceptions towards HIV/AIDS among youth in Myanmar.

(d) To determine the association between socio-demographic characteristics, psycho-social (knowledge and perception of substance use which affect risk behavior regarding HIV/AIDS), social factors (peer influence and family influence) and substance use among youth.

(e) To identify the association between socio-demographic characteristics, knowledge towards HIV/AIDS, perceptions towards HIV/AIDS and risk behavior towards HIV/AIDS.

(f) To find the association between substance use and risk behavior regarding HIV/AIDS.

1.3 Conceptual framework

This study was a cross-sectional study, which was conducted among youth in Yangon, Myanmar.

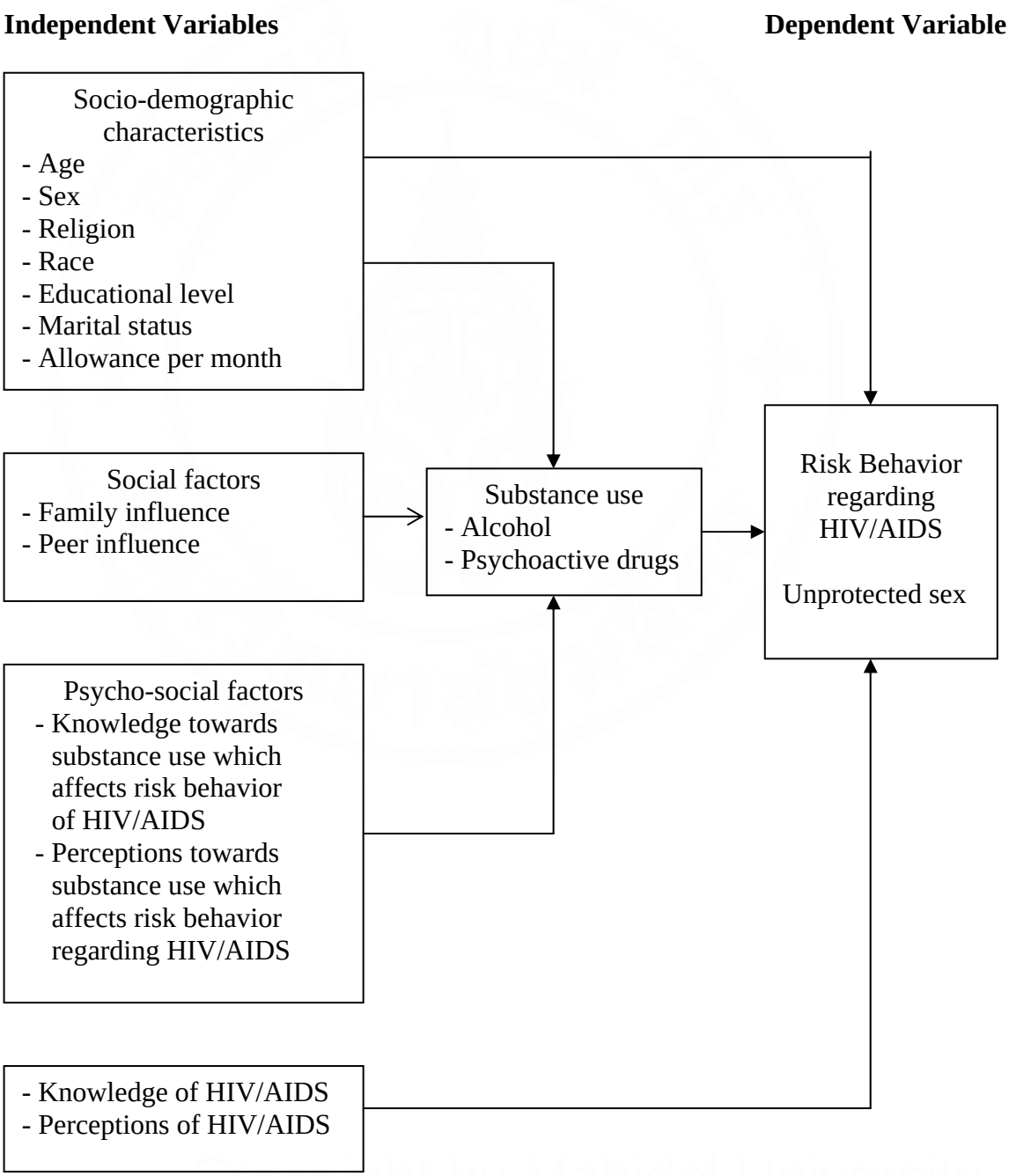

Figure 1.1 conceptual frameworks (based on health belief model and public health model)

1.4 Operational definition of studied variables

1.4.1 Socio-demographic characteristics

Age refers to respondent's age in completed years.

Sex refers to respondent's sex, either male or female.

Religion refers to respondent's religion in terms of Buddhist, Christian, Islam, Hindu, etc.

Race refers to respondent's ethnic group such as Kachin , Kayar, Kayin, Chin etc.

Educational level refers to respondent's educational level in terms of 1st Year University, 2nd Year University, 3rd Year University and 4th Year University

Marital Status refers to respondent's marital status in terms of never married, married, separated, divorced and widower/widow.

Allowance per month refers to the amount of money that a respondent receives every month from their guardian (in Kyats)

1.4.2 Social factors

Family influence refers to family factors that drive a respondent to use a particular substance, such as parents' drinking habits, parents' marital status.

Peer influence refers to the influence of friends on a respondent to use particular substances such as alcohol, whisky, beer or wine and psychoactive drugs like heroin, diazepam, amphetamine type stimulant, opium, glue sniffing, marijuana and cough syrup (for relaxing); and to share a common interest.

1.4.3 Psychosocial factors

Knowledge towards substance use which affects risk behavior regarding HIV/AIDS refers to understanding of the concepts or cognitive awareness in relation to types of substances, routes of administration and the adverse effects towards risk behavior regarding HIV/AIDS.

Perceptions towards substance use which affect risk behavior regarding HIV/AIDS refers to a respondent's opinion about the risk of substances towards risk behavior regarding HIV/AIDS.

Knowledge towards HIV/AIDS refers to knowing and understanding about the causes, modes of transmission and prevention of HIV/AIDS.

Perceptions towards HIV/AIDS refer to a respondent's individual feelings and beliefs about HIV/AIDS.

1.4.5 Substance use refers to alcohol consumption and/or drug use such as Heroin, Diazepam, Amphetamine type stimulants (ATS), Opium, Glue sniffing, Marijuana and cough syrup.

1.4.6 Risk behavior regarding HIV/AIDS refers to practices or activities which put on individual at risk of contracting HIV/AIDS infection. In this study, it refers to unprotected sex which means having sex without a condom in the last 12 months.

1.5 Limitation of study

The limitations of the study include: 1) information relied on self-reports without biochemical measures to validate alcohol and psychoactive drug use; 2) the self-report nature of the data raises the possibility that some participants might have

been reluctant to admit to being sexually active; 3) being a cross sectional survey, it is not possible to describe the true causality between exposure and outcome.

An additional limitation is that the university students in this sample were only selected from the students who came to the recreation centre of the Dagon University. As such, the university students who consumed alcohol and abused psychoactive drugs and who practiced unsafe sex might have been missed to take part.

CHAPTER II
LITERATURE REVIEW

This chapter reviews the literature relating to risky behavior of youth regarding HIV/AIDS. It includes

2.1 HIV/AIDS

2.1.1 Global Situation

Globally, the HIV epidemic has stabilized, with unacceptably high levels of new HIV infections and AIDS deaths. There were an estimated 33 million (30 million–36 million) people living with HIV in 2007. The annual number of new HIV infections declined from 3.0 million (2.6 million–3.5 million) in 2001 to 2.7 million (2.2 million–3.2 million) in 2007. Overall, 2.0 million (1.8 million–2.3 million) people died due to AIDS in 2007, compared with an estimated 1.7 million (1.5 million– 2.3 million) in 2001. Southern Africa continues to bear a disproportionate share of the global burden of HIV: 35% of HIV infections and 38% of AIDS deaths in 2007 occurred in that sub-region (14).

Altogether, sub-Saharan Africa is home to 67% of all people living with HIV. Women account for half of all people living with HIV worldwide, and nearly 60% of HIV infections in sub-Saharan Africa. Over the last 10 years, the proportion of women among people living with HIV has remained stable globally, but has increased in many regions. Young people aged 15–24 account for an estimated 45% of new HIV infections worldwide. Figure 2.1 shows HIV prevalence (%) among 15-24 years old, by sex, selected countries in 2005. Among young people in Africa, HIV prevalence tends to be notably higher among females than among males (14).

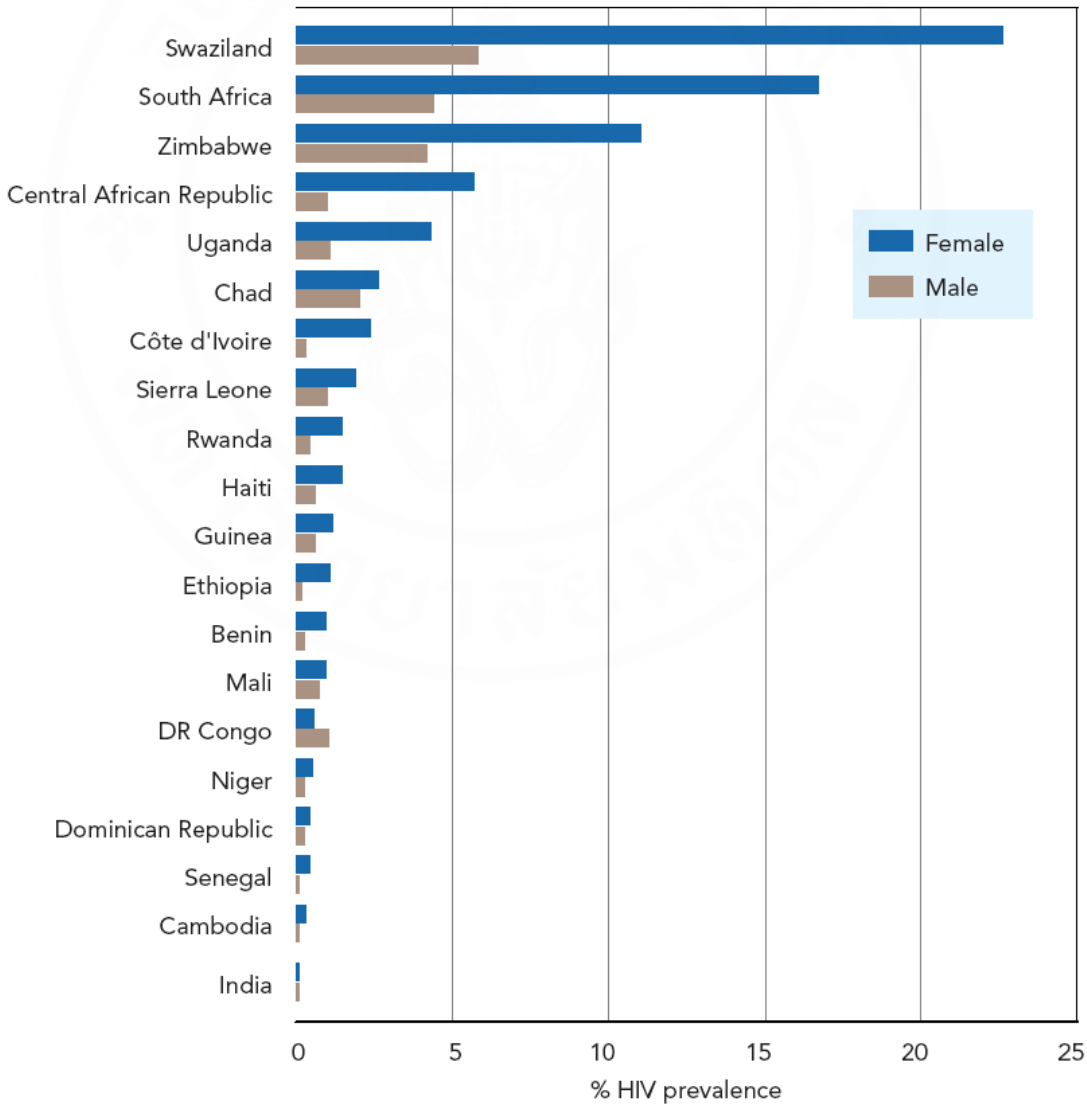

Figure 2.1 HIV prevalence (%) among 15-24 years old, by sex, selected countries, 2005

Source: Demographic and Health Surveys and other national population-based surveys with HIV testing.

An estimated 370,000 (330,000–410,000) children younger than 15 years became infected with HIV in 2007. Globally, the number of children younger than 15 years living with HIV increased from 1.6 million (1.4 million–2.1 million) in 2001 to 2.0 million (1.9 million–2.3 million) in 2007.

HIV prevalence among young women attending antenatal clinics in urban or rural areas (or both) has declined since 2000-2001. These countries include the Bahamas, Benin, Burkina Faso, Burundi, Côte d'Ivoire, Kenya, Lesotho, Malawi, Namibia, Rwanda, Swaziland, the United Republic of Tanzania, and Zimbabwe. Declines in HIV prevalence exceeded 25% in seven countries. In two of these countries—Botswana and Kenya declines occurred in both urban and rural areas. In five countries—Benin, Burkina Faso, Côte d'Ivoire, Malawi, and Zimbabwe—declines were significant only in urban areas (14).

2.1.2 Asia situation

In Asia, an estimated 5.0 million people were living with HIV in 2007, including the 380,000 people who were newly infected that year. Approximately 380,000 died from AIDS-related illnesses. National HIV infection levels are highest in South-East Asia, where there are disparate epidemic trends. In South and South East Asia, 4 million of adults and children were living with HIV. About 340,000 were newly infected with HIV and 270,000 were deaths because of AIDS related diseases. The number of people living with HIV/AIDS is also the second most highest in the world. The majority of HIV burden in the region concentrated in five countries namely India, Thailand, Myanmar, Nepal and Indonesia. The epidemics in Cambodia, Myanmar and Thailand all show declines in HIV prevalence. However, epidemics in Indonesia (especially in its Papua province), Pakistan, and Vietnam are growing rapidly. In Vietnam, the estimated number of people living with HIV more than doubled between 2000 and 2005. New HIV infections are also increasing steadily, although at a much slower pace, in populous countries such as Bangladesh and China (14).

2.1.3 Myanmar situation

Myanmar is a developing country in the South East Asia region. In recent years, economic development within the country has favored epidemiological transition. Myanmar is also faced with HIV/AIDS disease. HIV spread was started in Myanmar by the injecting drug users and now it is increasing among commercial sex workers and sexually transmitted disease patients.

Myanmar is one of the countries in Asia hardest hit by the HIV/AIDS epidemic. The cumulative number of all reported HIV positive cases indicates that the 25-29 year age group is most affected. It is predicted that AIDS will constitute a major cause of death in young adults during the coming decade in Myanmar. Though there is a lack of comprehensive national data on young people, they are likely to be particularly at high risk given the high prevalence of HIV in the general population. The predominant mode of transmission for both HIV and sexually transmitted infections (STIs) is sexual intercourse (15). Studies in India and Myanmar indicate that HIV infection rates are often higher in younger members of at-risk populations than in older age groups (16).

Active surveillance for HIV and AIDS began in Myanmar since 1985. The first AIDS patient was reported in 1991, an injecting drug user. The HIV sentinel subpopulations are injection drug users (IDUs), male STD patients, female STD patients, commercial sex workers (CSWs), pregnant women, blood donors, and military recruits. About 32,000 individuals are tested for HIV antibodies, each year for sentinel surveillance. A sample size of 6,000 at each round was surveyed for HIV/AIDS/STD related risk behaviors. The sentinel surveillance system is strengthened by behavioral sentinel surveillance system, STD (Syphilis) sentinel surveillance and AIDS death reporting (17).

HIV prevalence is highest among IDUs, followed by CSWs and STD patients. However, the main route for transmission is through unprotected sexual contact (68%) and the sharing of needles among IDUs (30%). The geographical

location of Myanmar is surrounded by Thailand, China and India, where the prevalence of HIV/AIDS is high, is also an alarming condition (18).

To determine the extent of HIV and AIDS problem in the country, an estimation Workshop was conducted in 2007 in Bangkok (17). Figure 2.1 shows estimated number of adults and children living with HIV. These estimates include all people whether or not they have developed symptoms of AIDS. There are approximately 250,000 adults and children living with HIV in Myanmar at the end of 2007, representing prevalence with 0.67% in a decreasing epidemic curve that had reached its peak in 2000 with the prevalence level of 0.94% (11).

Table 2.1 Estimated number of adults and children living with HIV

	2001	2007
Adults (15+) and children	300 000	250 000
Low estimate	230 000	160 000
High estimate	380 000	370 000
Adults (15+)	290 000	240 000
Low estimate	220 000	150 000
High estimate	370 000	360 000
Children (0-14)	-	-
Low estimate	-	-
High estimate	-	-
Adult rate (15-49) (%)	0.9	0.7
Low estimate	0.7	0.4
High estimate	1.2	1.1
Women (15+)	97 000	100 000
Low estimate	72 000	63 000
High estimate	130 000	150 000

Source: UNAIDS/WHO, 2008 (14)

Table 2.2 HIV prevalence among young people, 2007

	Male	Female
Prevalence among 15-24 year olds	0.7	0.6
Low estimate	0.3	0.3
High estimate	1.2	1.0

Source: UNAIDS/WHO, 2008 (14)

The prevalence of HIV in Myanmar is estimated to be declining, from a peak of 0.9% at the beginning of the decade to 0.7% in 2007 (0.4% - 1.1%). Improved surveillance and increased research on a variety of topics (sexual behavior particularly of men, gender, mobility, and the situation in prisons, for example) by government and private partners is required to confirm these estimates. The sustainability of the estimated decline will depend on the ability of Myanmar to increase the coverage of effective prevention services, particularly for vulnerable populations, enhance the capacity of civil society, empower women, and modify male behavior (19).

Figure 2.2 shows cumulative HIV positive cases by age and sex in Myanmar (1998 to December 2003). The ages of 25-29 years old are most affected followed by 30-34 years old and 20-24 years old groups (18).

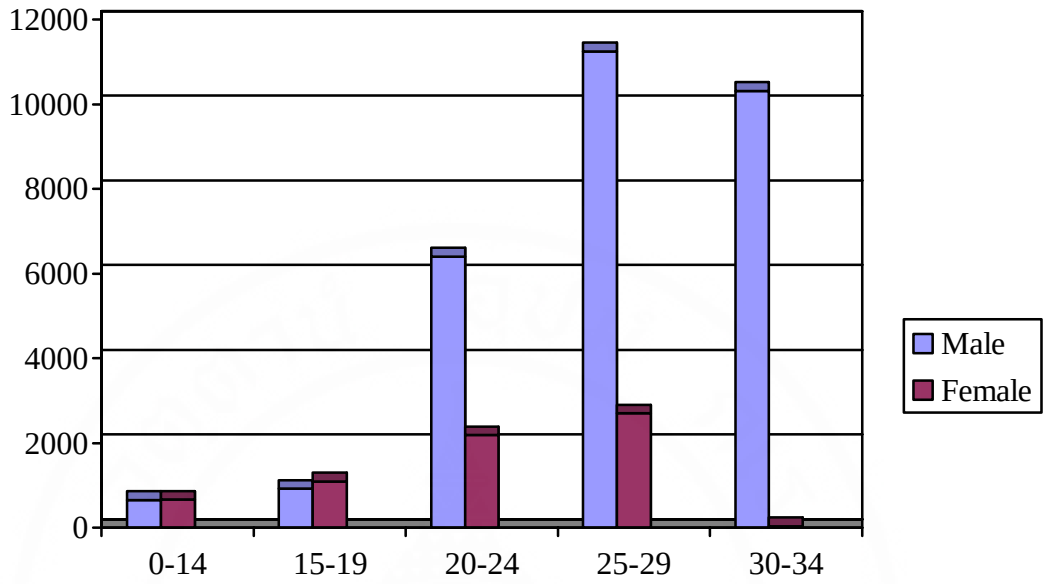

Figure 2.2 Cumulative HIV positive cases by age and sex (1998 to December 2003) in Myanmar

Source: National AIDS Program, Department of Health, Ministry of Health, 2004. (18)

A WHO study of risk behaviors and attitudes among ninth standard students revealed that more male students were found to be engaged in high-risk behaviors than female students. A statistically significant difference between male and female was found in the relation with smoking and drinking of alcohol. Male students vastly exceeded female students (20).

2.2 Substance Use and risky sexual behavior

2.2.1 Alcohol use

There is growing recognition that alcohol consumption is one of the major risk factors to public health. In 2002, WHO estimated that there were about 2 billion people worldwide who consumed alcoholic beverages, of whom 76.3 million suffered from alcohol abuse disorders. Globally, alcohol abuse causes 3.2% of all deaths (1.8 million deaths annually) and 4% of Disability-Adjusted Life Years

(DALYs) (58.3 million). These proportions are much higher in males (5.6% deaths and 6.5% of DALYs) than females (0.6% deaths and 1.3% DALYs) (21).

As the United States enters the second decade of the AIDS epidemic, it has become evident that the primary defense against the spread of this disease is prevention of the behaviors that result in HIV transmission. Recent behavioral research has focused on identification of potentially modifiable variables that may contribute to risk-taking behaviors. One factor that has been proposed as a contributor to sexual risk-taking is the use of alcohol or other drugs with sex. Because alcohol and drugs are thought to interfere with judgment and decision-making, it has been suggested that their use in conjunction with sexual activity might increase the probability of risky behaviors. In the last few years, a number of reports have appeared and suggested that a link between alcohol or drug use and sexual behavior, such as unprotected intercourse, was known to place an individual at higher risk for HIV infection (22).

In recent years, the public health field has seen an increasing amount of research devoted to adolescent sexual behavior. In 1983, 74% of women and 83% of men in the United States reported that they had engaged in sexual intercourse before their 20th birthdays, according to the National Research Council 1987. The number of current AIDS cases among adolescents is relatively small. However, because the human immunodeficiency virus causing this disease has a long incubation period, it is likely that many young adults who have a diagnosis of AIDS were infected with the virus as adolescents. Moreover, the proportion of AIDS cases attributable to heterosexual transmission is two to three times higher among adolescents than among adults (23).

Because the prospect of either a vaccine or a cure for AIDS remains remote, efforts to stem the spread of HIV infection have increasingly emphasized prevention. Public health research has focused on identifying individual and situational factors associated with sexual risk-taking behaviors (such as unprotected sexual intercourse) that expose individuals to HIV. One of these factors is the use of alcohol

or other drugs in conjunction with sex (24). Alcohol use and sexual activity often are initiated during the teenage years, and approximately one-half of both male and female adolescents report that they drank alcohol at the time of their first sexual encounters (25).

Because the event-specific technique ensures that drinking and sexual activities are temporally paired in the incidents studied, the resulting data represent an improvement over data from correlation studies. However, this event-specific information does not necessarily take other confounding variables into account. A general predisposition to risk taking, for example, may influence both drinking and unprotected intercourse: risk takers may be more likely to drink on any given occasion and also may be more likely to engage in unprotected intercourse on any given occasion (26).

Knowledge about a specific occasion does not necessarily reveal whether these individuals are more likely to engage in unprotected intercourse when they are drinking than when they are not. Data on discrete events, while providing information on the co-occurrence of both alcohol consumption and high-risk sexual behavior, still do not provide compelling evidence that drinking causes sexual risk-taking (27).

People who consumed alcohol are more likely to engage in behaviors that place them at risk of contracting HIV. For example, rates of injection drug use are high among alcoholics in treatment, and increasing levels of alcohol ingestion are associated with greater injection drug–related risk behaviors, including needle sharing.

A history of heavy alcohol use has been correlated with a lifetime tendency towards high-risk sexual behaviors, including multiple sex partners, unprotected intercourse, sex with high-risk partners (e.g., injection drug users, prostitutes), and the exchange of sex for money or drugs. There may be many reasons for this association. For example, alcohol can act directly on the brain to reduce inhibitions and diminish risk perception. Alcoholism prevention among youth is of particular importance. AIDS is a leading cause of death among people aged 15 to 24,

and new injection drug users who contract HIV or viral hepatitis often become infected within 2 years after beginning to inject drugs (28).

A 1997 study by Kigozi et al. (29) concluded that there was a relationship between alcohol and HIV/AIDS in Uganda. This should raise more alarm bells, given the fact that with stagnation in the country's adult HIV/AIDS prevalence rates, WHO recently ranked Uganda the leading consumer of alcohol in the world. Per capita alcohol consumption in Uganda was 19.5 liters, followed by Luxembourg at 17.54 liters.

Another study by Donovan and Jessor in 1985 (30) supports the argument that alcohol is thought to be associated with HIV/AIDS through two possible mechanisms. In the initial stages it increases sexual desire which increases the risk of acquiring HIV/AIDS through unprotected sex. The second possible mechanism is that alcohol abuse may be a marker for individuals who tend to have risk taking personalities rather than a direct cause of high risk behavior.

The Uganda Demographic and Health Survey published in 2006 (31) shows that engaging in sex under the influence of alcohol can impair judgment, compromise power relations and increase risky behavior. The study noted that six percent of women and two per cent of men in the age group 12 -24 years, reported that they or their partners were drunk the last time they had sex- 12 months preceding the survey.

Another study conducted by the Ministry of Health in Uganda in 2005 revealed that condom use is never the solution to people who are highly intoxicated. They may never remember to use them because of impaired thinking, and, if they do remember, they may not use them properly (32).

While many adolescents have heard of HIV, most are still unaware of how to protect themselves from the virus. Many also harbor serious misconceptions about HIV and their own personal risk. Whether willingly or through coercion, most people

begin sexual activity during adolescence. Those adolescents who initiate sexual activity the earliest have the greatest risk of HIV infection due to biological immaturity, a sense of invincibility, and an increased length of time between sexual initiation and marriage. They are also more likely to have multiple sexual partners. Younger, sexually active adolescents are also less likely to use condoms. In the KwaZulu Natal region of South Africa, almost 90% of sexually active 14-year-old girls did not use condoms at first sexual intercourse. Finally, the presence of other sexually transmitted infections (STIs) also increases the likelihood of HIV infection; while STI infection rates are high among young people, few seek treatment for STIs (33).

2.2.2 Drug abuse and risky behavior with regard to HIV

There are an estimated 13.2 million IDUs - worldwide, 78% of whom live in developing or transitional countries (34). IDUs are particularly vulnerable to HIV and other blood-borne infections (such as hepatitis C) as a result of sharing contaminated injecting equipment. All drug-dependent individuals, including IDUs, may be at increased risk of HIV infection because of high-risk sexual behaviors. The sharing of contaminated injecting equipment has become a major driving force of the global AIDS epidemic and is the primary mode of HIV transmission in many countries throughout Eastern Europe, the Commonwealth of Independent States, and significant parts of Asia (35). In some cases, epidemics initially fueled by the sharing of contaminated injecting equipment are spreading through sexual transmission from IDUs to non-injecting populations.

Data on the size of the IDUs population and HIV prevalence among IDUs are scarce. Estimating the size of the IDUs population is difficult because drug use is an illegal and stigmatized activity. IDUs are often hidden and avoid settings where researchers might obtain data for fear of arrest or stigmatization (36). HIV prevalence is difficult to estimate because many areas also lack the capacity to systematically monitor HIV infections among IDUs (37). Areas with routine HIV surveillance collect most of the data at institutions such as prisons, jails, and drug abuse treatment and outreach centers, which do not necessarily represent the IDUs population at large (38).

In Asia, an estimated 8.3 million people were living with HIV at the end of 2005, with India home to more than two-thirds of these individuals. While sexual transmission is still the predominant route of transmission in India, injecting drug use is driving the epidemic in the northeast states of Manipur, Mizoram, and Nagaland, and increasingly in the major cities of Chennai, Mumbai, and New Delhi. In Vietnam, injecting drug use and sex work are the main drivers of the HIV epidemic, with prevalence among IDUs rising from 9 percent in 1996 to 32 percent in 2003. Although Thailand has witnessed dramatic declines in the levels of HIV and sexually transmitted infections since the late 1990s, HIV among IDUs remains a major problem (35).

Other countries such as Indonesia and Bangladesh report low HIV prevalence among the general population, but the potential remains for explosive epidemics among high-risk groups such as IDUs and CSWs. Although data are very limited for Myanmar, an estimated one in three IDUs was HIV seropositive in 2004. In China, injecting drug users accounted for almost half of the people living with HIV in 2005. Sexual transmission has also grown substantially in the past few years, and evidence shows HIV infection spreading to the general population (35).

In addition to opiates which are commonly injected, amphetamine-type stimulants and cocaine are also major injectable drugs of abuse in many high-risk countries (35). Regions and countries vary widely in the types of drugs people use and their injecting behavior. In Latin America, for example, cocaine is the most commonly injected drug, although opium derivatives are increasingly available (41). In Southeast Asia, methamphetamine production, trafficking, and use are rising dramatically, with an unknown percentage of users transitioning to injecting amphetamine use (39). In south Asia, besides heroin, IDUs commonly inject synthetic painkillers, benzodiazepines, and other pharmaceuticals (40).

The sharing of contaminated injecting equipment is the primary mode of HIV transmission among IDUs, accounting for up to 80% of all HIV infections among IDUs in Eastern Europe and Central Asia (35). Sexual transmission from HIV-infected drug injectors to their sex partners is becoming an important secondary means of

spread infections (42). Sexual transmission from HIV-infected IDUs to their sex partners is becoming an important route of HIV transmission. Drug use is highly correlated with unsafe sexual practices, including unprotected sex, multiple partners, or exchanging sex for money or drugs (43).

Many studies have found links between injecting drug use, commercial sex, and risky sexual behavior, resulting in high rates of HIV prevalence among sex workers who are also IDUs. Studies have shown that drug injecting sex workers are more willing to engage in unprotected sex, and more likely to have a non-paying sex partner who is an IDU (44). National survey data also reveal a link between injecting drug use and high-risk sexual activity among CSWs. In Ho Chi Minh City, Vietnam, 49% of injecting sex workers are infected with HIV, compared with 19% of those who use drugs but do not inject, and 8% of those who do not use drugs at all (45).

Finally, some non-injecting women are infected with HIV by their injecting sexual partners or husbands. In a study in Sao Paulo, 40% of non-injecting HIV-infected females had acquired the virus through unsafe sexual activity with IDUs (43).

2.3 Theoretical Models

Far more than biological and epidemiological perspectives would suggest, the concepts of risk and safety are in reality much more complicated as people can differ in feelings and experiences, and are influenced by different cultures, social norms and actual circumstances. For instance, steady partners who can be potentially at risk might be perceived as HIV free which can lead routinely to unprotected sex.

Such a complexity of sexual behaviors has attracted the concern of many scientists and different concepts have been developed and different models have been developed or reconstructed.

One very well known model which has been applied to research sexual behavior relating to HIV/AIDS prevention is the Health Belief Model (HBM). The HBM has been used both to explain change and maintenance of health behavior, and as guiding framework for health behavior intervention. The HBM is a value expectancy theory. When value expectancy concepts were gradually reformulated in the context of health related behavior, the translations were (1) the desire to avoid or to get well (value) and (2) the belief that a specific health action available to a person would prevent illness (expectancy).

The components, key concepts and definitions of HBM are as follows:

Concept	**Definition**
Perceived susceptibility	One's opinion of chances of getting a condition.
Perceived severity	One's opinion of how serious a condition and its sequelae are.
Perceived benefits	One's opinion of the efficacy if the advised action to reduce risk or seriousness of impact.
Perceived barriers	One's opinion of the tangible and psychological costs of the advised action.
Cues to action	Strategies to activate one's "readiness."
Self-efficacy	One's confidence in one's ability to take action (46).

In this study, the perceived susceptibility, perceived severity, perceived benefits, perceived barriers and self-efficacy were applied in the conceptual framework, as it was deemed appropriate to study the association of the independent variables to the dependent variable which was the risk behavior regarding HIV/AIDS among youth.

There are many reasons why young people may use substances. It was shown that the effects psychoactive substances have on individuals depend on at least three things: the individual (host), the substance (agent) and the environment (the context of use). This is the public health model, which also shows how the use of substances is a result of interactions between the individual, the substance and the environment.

The knowledge and attitude the individual may have about substances and their effects can influence the use of these substances. The individual's present coping skills with respect to the difficulties of life and peer pressure may also influence their decision to use substances. The existence of a substance creates a fundamental risk factor. The composition and nature of the substance can influence use. The percentage of ethanol in alcoholic drinks and their cost, for example can influence the decision as to whether or not to use substances.

Within the environment a variety of factors may influence use of substances. These include: existing cultural norms: general and peer-group attitudes about substance use, behaviors of parents, peers and role models, marketing strategies used for the promotion of the substances, laws, policies and regulations that limit the availability and accessibility of substances, possibilities for livelihood and personal development (47).

2.4 Related studies

A study of risk behaviors, attitudes and subjective norms among Ninth standard students in Hlaing Township was conducted with total of 199 students completed a self-administered questionnaire to collect baseline data. Nearly 44% of males and 3.03% of females were ever smokers. Among these students, 47.4% of male and 14.1%of female admitted to have drunk alcohol and 12.4% of male and 5.4% of female were ever used drug (20).

The drug use survey among high school students of border area townships of Myanmar was conducted at 2004. A total of 4001 high school students from five townships situated in border area with India, China and Thailand took part in the survey. Beer was the most common substance which the students reported having experimented at least once (18.7%). This was followed by cigarette (15.5%), alcohol (12.9%). Among the prescription drugs cough syrup containing codeine was the most common drug experimented followed by diazepam (1.1%). Among the illicit drug, marijuana was the most common drug experimented by the students (1.8%) followed by opium 1.4%, ATS (1.3%) and heroin (1%) (48).

A study conducted in 200 alcohol dependent patients admitted to mental health hospital by Htwel L, (2006). It was found that in alcohol per se group, 30-39 years was the most common (39.1%), while alcohol plus opiate or amphetamine group, 20-29 years was the most common (31.5%). The finding might suggest that multiple substance use had come for treatment at earlier age than single substance use during their process of addiction (49).

The result of study by Aung KK (50) showed that there was association between age and risk behavior on HIV/AIDS. The study showed the older the age, the more risky behaviors they have. According to Homenouhak K (51), this study reported that the younger age group had good safe sex intension than the elder age group. Some adolescent living with their family did not have chance for sexual activities. There was a statistically significant association between safe sex intention towards HIV/AIDS prevention and parent-child communication.

The study of sexual behavior and condom use among university students in Madagascar showed that the religion is not associated with condom use. Firstly, the difficulties of integrating sexual education in Christian teaching. Secondly, the gap between Christian identity and individual behavior with regard to some of its doctrines. For example, condom use was recorded in spite of the Catholic position against condoms. Besides, none of the sexually active students had indicated religion as a reason for non condom use. Data also suggest that instead of religious affiliation or

identity, faith-based religiosity could be a measure of interest in the study of relationships between religion and sexual behaviors in Madagascar (52).

The study of Myanmar migrant sexually active woman found that the levels of education were associated with risk behavior on HIV/AIDS. The results found that 70% of low education level had moderate and high HIV risk behaviors compared to 30% of higher education group. It was also found that there was a statistically significant association between marital status and risk behavior regarding HIV/AIDS (53).

People have a right to get information, skills and services to help protect them from the risk behavior. They cannot protect themselves if they do not know about the facts regarding HIV/AIDS. Children and young people must learn the facts before they become sexually active, and the information need to be regularly reinforced and built on, both in the classroom and beyond. It is essential a basic education of good quality such as knowledge about sexuality, route of transmission of HIV and reduce discrimination/ stigma for all children and young people in the school (50).

In a study to examine the relationship of substance use to sexual activity among young adults in the United States, it was found out that 97% of the sample reported that they were heterosexual. The majority (86%) had been sexually active in the previous 12 months; a small percentage (3%) said they had had sex in the past but were celibate in the previous year, and a larger percentage (11%) had never had intercourse. Bivariate analyses show that respondents who drank frequently, were more likely than the others to have had sex in the past year. There was no clear bivariate association between substance use and the practice of consistent condom use. However, the prevalence of consistent condom use among those sexually active in the past year was low (9%) (54).

The study of knowledge, attitude and behavior on HIV/AIDS by factory workers in Myanmar by Than SL (2004) showed that the frequency of condom use in extramarital sexual affairs, about 50% of respondents used condoms regularly (55).

In a study to test whether khat and alcohol use and risky sex behavior among in-school and out-of-school youth in Ethiopia, findings revealed that a total of 16060 (82%) reported on their sexual behavior. Over 20% of out-of-school youth had unprotected sex during the 12 month period compared to 1.4% in-school youth. The odds of unprotected sex were slightly higher among males compared to females. In those aged 15-19 years compared to those age 20-24 years, adjusted OR (95% CI) = 2.54 (2.29, 2.81). There was a significant and linear association between alcohol intake and unprotected sex with those using alcohol daily having a three fold increased odds compared to those not using it. This is because of the nature of alcohol in decreasing inhibitions, altering rational decision making and increasing risk-taking behavior (56).

An Early study, substance use among Manitoba High School students (57) was conducted in 2001. 4689 students were included in that survey, 49.5% were female and 50.5% were male. The average age is 16.7 years. Over half of the students surveyed had smoked at some point in their lives, with females more likely to smoke than males (60% vs 54%). Smoking rates increase as one gets older. Slightly over 43% of all Senior 4 students smoked in the past year, compared with 34% of Senior 1 students. Students were asked if they had ever used alcohol. 87.4% reported that they had used alcohol at some point in their life. There are no differences between males and females. However, there are some expected differences across grades. Students in the more senior grades are more likely to have ever had a drink of alcohol. This occurs because they are older and more likely to have been exposed to opportunities to drink. Of the students who had ever had a drink, 92.2% had used alcohol in the past year, and this percentage is higher in the higher grades. For example, 96.3% of the Senior 4 students drank in the past year, whereas 87.8% of the Senior 1 students drank alcohol in that time frame. The frequency of drinking is higher in the higher grades.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Study design

This research was a cross-sectional descriptive study, and aims to describe the risk behaviors of youth regarding HIV/AIDS and the prevalence of substance use among youth in Myanmar. It was also identified factors that influenced to substance use and the risk behavior regarding HIV/AIDS. The association between substance use and risk behavior regarding HIV/AIDS among youth in Yangon, Myanmar was also determined.

3.2 Study population

The study population comprised university students aged 18 to 24 years who were studying Dagon University in Yangon City, Myanmar. There were 24312 students studying in this university (58). Participants were excluded if they were not willing to participate in this study.

3.3 Sampling Technique

A purposive sampling method was used to select one university in Yangon City. Dagon University has been selected to be the study area. All the study samples were taken from the university students who came to the recreation centre of Dagon University. The respondents were selected by an interval of 3. Therefore, every three

university student who came into the recreation center of that university was selected as a sample.

3.4 Sample size determination

The required sample size estimation in this study was based on the following equation (59):

$$n = \frac{Z^2 P (1-P)}{d^2} = \frac{(1.96)^2 \times 0.34 \times 0.66}{(0.05)^2} = 344.82$$

Where

n = Estimated Sample Size

Z = significance level at 0.05 was 1.96

p = 0.34 (This proportion was from risk behaviors on HIV/AIDS among youth in South Okkalapa township Myanmar, 2005) (60)

d = degree of accuracy desired, usually setting as 0.05

Therefore, the sample size required for this study was 345. To prevent information loss from incomplete data and withdrawal of participants from this study, the sample size was increased by 10%. Therefore, the sample size in this study was 380.

3.5 Research instrument for data collection

A structured self-administered questionnaire was used as research instrument for data collection. Initially, the questionnaire was prepared in English then translated into Myanmar language. The structured questionnaire was composed of six parts as follows:

Part 1: Socio-demographic characteristics

Part 2: Social factors

Part 3: Psycho-social factors

Part 4: Knowledge and perception regarding HIV/ADIS

Part 5: Substance use

Part 6: Risk behaviors regarding HIV/AIDS

Part 1: Socio-demographic characteristics

This part consisted of seven questions about the socio-demographic characteristics of youth, namely: age, sex, religion, race, educational level, marital status, and allowance per month. These questions included both closed and open ended types.

Part 2: Social factor

This part consisted of sixteen questions. It was included father's occupation, mother's occupation, family income, family relationship and peer influences which were closely linked with both the initiation and continuation of drinking alcohol and using psychoactive drugs.

Part 3: Psycho-social factors

Psychosocial factors included knowledge and perception regarding substance use which affects risky behavior regarding HIV/AIDS. The knowledge part consisted of ten questions focusing on the knowledge of respondents regarding substance use, such as types of drugs, route of using and effects or dangers of using drugs. The answers were in multiple choice form with codes (Yes=1, No=0, Don't know= 0). Each correct answer was given one score with a minimum score of 0 and a maximum score of 10. The level of knowledge was classified into 3 groups based on Bloom's cut off point for knowledge (61).

Good knowledge	:	> 80% of the total score=	>8 marks
Moderate knowledge	:	60-80% of the total score =	6-8 marks

Poor knowledge : < 60% of the total score = < 6 marks

The perception part consisted of thirteen questions. The questions were prepared based on Likert Scale (strongly agree, agree, not sure, disagree, and strongly disagree). The questionnaire was modified after conducting pre test. The scale was rearranged into three categories (strongly agree/ agree, don't know, disagree/ strongly disagree). A respondent's scores on the answers to each question were scored lowest = 1 and highest = 3, depending on whether the question was positive or negative.

For the positive perception questions, the scoring was given as follows:

Strongly agree/ agree = 3 marks
Not sure = 2 marks
Disagree/ strongly disagree = 1 mark

For the negative perception questions, the scoring was given as follows:

Strongly agree/ agree = 1 mark
Not sure = 2 marks
Disagree/ strongly disagree = 3 marks

Thus, the total ranges of scores were from 13-39 marks. The level of perception was classified into three levels based on total score.

Good perception : > 80% of the total score= > 28 marks
Moderate perception : 60-80% of the total score= 21-28 marks
Poor perception : <60% of the total score= <21 marks

Part 4: Knowledge and perception about risk behavior regarding HIV/AIDS

Knowledge about risk behavior regarding HIV/AIDS consisted of seven questions. The answers were in multiple choice form with codes (Yes=1, No=0, Don't know= 0). Each correct answer was given one score with a minimum score of 0 and

maximum score of 10. The level of knowledge was classified into 3 groups based on Bloom's cut off point for knowledge (61).

Good knowledge	:	> 80% of the total score =	>5 marks
Moderate knowledge	:	60-80% of the total score =	4-5 marks
Poor knowledge	:	< 60% of the total score =	<4 marks

Perception of risky behavior regarding HIV/AIDS comprised 9 questions, based on the Likert Scale. (Strongly agree, agree, not sure, disagree, and strongly disagree). For purposes of analysis, the scale was rearranged into three categories (strongly agree/ agree, don't know, disagree/ strongly disagree). The respondent's scores on the answer to each question were lowest = 1 and highest = 3, depending on whether the question was positive or negative.

For the positive perception questions, the scoring was given as follows:

Strongly agree/ agree	=	3 marks
Not sure	=	2 marks
Disagree/ strongly disagree	=	1 mark

For the negative perception questions, the scoring was given as follows:

Strongly agree/ agree	=	1 mark
Not sure	=	2 marks
Disagree/ strongly disagree	=	3 marks

Thus, the total ranges of scores were from 9-27 marks. The level of perception was classified into three levels based on total score.

Good perception	:	> 80% of the total score
Moderate perception	:	60-80% of the total score
Poor perception	:	<60% of the total score

Part 5: Substance Use

There were fourteen questions for substance use. These was included a description of alcohol drinking patterns, age of initiation of alcohol drinking, the main reason for drinking alcohol and the types of psychoactive drugs used by the respondents.

Part 6: Risk behavior regarding HIV/AIDS

This part had seventeen questions about risk behavior regarding HIV/AIDS, namely unprotected sex. The questions were asked about the sexual behaviors of the respondents and the use of condoms for their sexual activity. This part also included questions about having sexual intercourse after consuming alcohol and after using psychoactive drugs. Risk behavior regarding HIV/AIDS was defined as sex without the use of condoms in the last 12 months period. Irregular use of condom was also categorized as unprotected sex.

3.6 Pretest

Before data collection, a pre-test was done by the self-administered questionnaire using 30 randomly selected university students of the West Yangon University. These questionnaire were enabled any such flaws to be rectified to ensure the validity and reliability of the questionnaire before it was distributed to the target respondents. Reliability of the questionnaire was tested by using Kuder-Richardson formula 20 (KR20) and Cronbach's Alpha for the knowledge and perception, respectively. Pretest was done twice because KR20 and Cronbach's alpha is very low for the first pretest. Therefore, some questions were revised to make the respondents more understandable. The results of the second pretest were as follows: KR20 = 0.84 (for knowledge towards substance abuse) and Cronbach's alpha = 0.80 (for perception towards substance use) and KR20 = 0.68 (for knowledge regarding HIV/AIDS) and Cronbach's alpha = 0.57 (for perception regarding HIV/AIDS).

3.7 Data collection procedure

After having approved letter from Ethical Committee board (COA. No. MU-IRB 2009/299.0112), the data collection was conducted in Dagon University, Yangon City, Myanmar during January to February 2010. Data were collected after getting permission from the authority of the university. All the respondents were explained about the purpose of this study and their right to refuse or withdraw anytime and could return the questionnaire back without giving answer if they felt reluctant to respond some of the questions. Participation of respondents was on voluntary basis and the answers were anonymous. The questionnaire was distributed if the respondent was willing to participate in this study and was dropped to the box after finished.

3.8 Data Analysis

The data was analyzed by the MINITAB software as descriptive statistical analysis using frequency, percentage, mean and standard deviation. For inferential statistics, binary logistic regression was used to determine the relationship between each independent variable and the outcome variable. Crude odd ratio was presented to show the strength of association and 95% confidence interval of odd ratio to show the significance of association. Multiple logistic regression was used to determine the significant factors that influenced on the substance use and risk behavior regarding HIV/AIDS.

CHAPTER IV
RESEARCH RESULTS

This study was intended to identify factors related to substance use and the relationship between substance use and risky behavior of HIV/AIDS of youth, in Yangon, Myanmar. Data was collected from 380 university students, who were studying in Dagon University through a self-administered questionnaire on 3 January, 2010. All distributed questionnaires were fully completed.

The results are presented in two parts as follows:

1. Descriptive statistical analysis
    - Socio-demographic characteristics
    - Social factors
    - Knowledge and perceptions of substance use
    - Knowledge and perceptions of risk behavior of HIV/AIDS
    - Substance use
    - Risk behavior of HIV/AIDS

2. Inferential statistical analysis
    - The association between socio-demographic characteristics, psycho-social (knowledge and perception of substance use which affects risk behavior regarding HIV/AIDS), social factors (peer influence and family influence) and substance use by youth.

    - The association between socio-demographic characteristics, knowledge towards HIV/AIDS, perceptions regarding HIV/AIDS and risk behavior towards HIV/AIDS.

- The association between substance use and risk behavior regarding HIV/AIDS.

The associations between the independent variables and dependent variable were analyzed using multiple logistic regression. Statistical significance was determined and interpreted based on the level of statistical significance at $\alpha = 0.05$.

4.1 Descriptive statistical analysis

4.1.1 Socio-demographic characteristics

The frequency and percentage distribution of socio-demographic variables is shown in Table 4.1. With regard to age, the median age was 19 years old. Minimum and maximum ages were 18 to 24 years old respectively. Those who were less than 20 years comprised 67.11% and those who were 20-24 years old made up 32.89% of the total sample.

Males were 47.89% and 52.11% were females. For religion, a great majority of the university students 90.00% were Buddhist, 6.58% were Christian, 2.89% were Muslim, and only 0.53% were Hindu. With regard to race, Bamar (Myanmar) comprised 87.11% of the university students, while non-bamar (non Myanmar) comprised 12.89%. Most of the university students were single (98.16%). With regard to monthly allowances, 45% of the university students estimated that their monthly allowances were between 15001- 30000 kyats, while 35% of the university students estimated that their monthly university students' allowances were about 30001-100000 kyats.

Table 4.1 Frequency and percentage distribution of university students by socio-demographic characteristic

Socio-demographic characteristic	Frequency (n= 380)	Percentage (%)
Age		
< 20 years	255	67.11
≥ 20 years	125	32.89
Median (years) = 19, QD = 1, Min = 18, Max = 24		
Sex		
Female	198	52.11
Male	182	47.89
Religion		
Buddhist	342	90.00
Christian	25	6.58
Islam	11	2.89
Hindu	2	0.53
Race		
Bamar (Myanmar)	331	87.11
Non-bamar (Non-Myanmar)	49	12.89
Marital status		
Single	373	98.16
Married	7	1.84
Monthly allowance		
< 15000 kyats	76	20.00
15001 kyats – 30000 kyats	171	45.00
> 30000 kyats	133	35.00
Mean = 34672.37, SD = 20607.36, Min = 10000, Max = 100000		

4.1.2 Social factors

The social factors are presented in Table 4.2. With respect to the occupations of the university students' fathers, 52.11% were self-employed, 29.74%

were in government service and 1.84% were unemployed. For the mothers' occupations, 57.11% were housewives, while 18.16% reported being self-employed. Regarding the estimated monthly family income, 55.00% of the university students' families received money ranging from 100001 kyats to 300000 kyats. 23.68% of the university students received less than 100000 kyats, while the remainder got 300001 kyats or more. For parental relationships, 88.42% of the university students' parents stayed together, 6.83% of university students' parents were widows or widowers. 84.21% of the university students lived with their parents; 10.53% lived with relatives and 3.2% lived at friends' houses.

Regarding the question about discussing the serious affects of substance use, 68.68% of the university students answered that they discussed the serious affects of substance use with their families while 31.32% of them stated that they had never discussed about the adverse affects of substance use in their families. The majority of university students were living happily with their respective families but 3.95% of the university students answered that they were not happy living with their families. Regarding the level of happiness, 61.92% answered that their happiness levels had been high although only 4.11% of the university students replied that they had little happiness.

Table 4.2 Frequency and percentage distribution of university students by social factors

Social factors	**Frequency (n= 380)**	**Percent (%)**
Father's occupation		
Government service	113	29.74
Hawker	37	9.74
Self-employed	198	52.11
Unemployed	7	1.84
Died	25	6.58

Table 4.2 Frequency and percentage distribution of university students by social factors (cont.)

Social factors	Frequency (n= 380)	Percent (%)
Mother's occupation		
Government service	42	11.05
Hawker	48	12.63
Self-employed	69	18.16
Housewife	217	57.11
Died	4	1.05
Family income (estimated)		
Less than 100000 kyats	90	23.68
100001 kyats – 300000 kyats	209	55.00
300001 kyats and above	81	21.32
Mean = 289931.6, SD = 324865.74, Min = 40000, Max = 3500000		
Parent's relationship		
Stay together	336	88.42
Divorced	10	2.63
Widower/ Widow	26	6.84
Separate	5	1.32
Others	3	0.79
Guardianship		
Parents	320	84.21
Relative	40	10.53
Friend's house	12	3.16
Others	8	2.11
Discussing the serious affects of substance usage with family		
No	119	31.32
Yes	261	68.68

Table 4.2 Frequency and percentage distribution of university students by social factors (cont.)

Social factors	Frequency (n= 380)	Percent (%)
Living happily with family		
No	15	3.95
Yes	365	96.05
Level of happiness		
High	226	61.92
Moderate	124	33.97
A little	15	4.11

Table 4.3 shows the frequency and percentage distribution of university students whose family members and friends used substances. 51.84% of the university students admitted that their family members drank alcohol and 45.79% reported that there were smokers in their families. With regard to psychoactive drug use, 10.26% of the university students' family members used cough syrup (for relaxing), and 5.53% of the university students' family members used diazepam without a doctor's prescription. 52.89% of the university students admitted that their friends drank alcohol and more than 60% reported that their friends had smoking habits. With regard to psychoactive drug use, 13.68% of the university students' friends used cough syrup (for relaxing) and 5% used diazepam without a doctor's prescription.

Table 4.3 Frequency and percentage distribution of substance use by family member and friends

Substance use	Family members		Friends	
	(n)	(%)	(n)	(%)
Alcohol	197	51.84	201	52.89
Smoking	174	45.79	232	61.05
Heroin	3	0.79	3	0.79

Table 4.3 Frequency and percentage distribution of substance use by family member and friends (cont.)

Substance use	Family members		Friends	
	(n)	(%)	(n)	(%)
Diazepam (for relaxing)	21	5.53	19	5.00
Amphetamine Type Stimulant	3	0.79	4	1.05
Opium	3	0.79	1	0.26
Glue sniffing	6	1.58	2	0.53
Marijuana	7	1.84	22	5.79
Cough Syrup (for relaxing)	39	10.26	52	13.68

Table 4.4 shows more than one-half of the university students (54.21%) believed that their friends were the biggest influence in their drinking (or not drinking alcohol). The majority of the university students (92.89%) spent their leisure time with their friends and 46.32% of the university students were asked to drink alcohol by their friends. 80.67% of the university students confirmed that their first partners for smoking, drinking alcohol or using drugs were their friends, but only 2.67% of them said that their first partners were their family members. 93.68% of the university students did not get rewards from friends if they were smoking, drinking alcohol or using drugs together with their friends. However, 85.53% of them responded that they did not receive a punishment from their friends if they were not smoking, drinking alcohol or using drugs together with them.

Table 4.4 Frequency and percentage distribution of peer influence on substance use

Statement	Frequency (n= 380)	Percent (%)
The biggest influence in drinking or not drinking		
Friends	206	54.21
People in your community	111	29.21
Parents who drink	23	6.05
Religious beliefs	40	10.53
Spend leisure time with friend		
No	27	7.11
Yes	353	92.89
Asked to drink alcohol by friends		
No	204	53.68
Yes	176	46.32
Persons who participate smoking, drinking alcohol and using drugs		
Friends	121	80.67
Partner (boyfriend/ girlfriend/ spouse)	9	6.00
Family members	4	2.67
Missing value	16	10.67
Get reward from friends, if smoking, drinking alcohol or use drug with them		
No	356	93.68
Yes	24	6.32
Received a punishment from friends, for not smoke, drink alcohol or use drug with them		
No	325	85.53
Yes	55	14.47

4.1.3 Psycho-social factors

Knowledge regarding substance use

Table 4.5 displays the frequency and percentage distribution of the university students by level of knowledge about substance use. Data was elicited by 10 questions, and knowledge levels were classified according to Benjamin Bloom's criteria as high, moderate or low level.

Nearly one-half of the university students (47.11%) had moderate levels of knowledge and 41.58% of them had low levels. However, only 11.32% of the university students possessed high levels of knowledge about substance use. The mean total knowledge score was 5.85 and standard deviation was 2.25. Minimum and maximum scores were 0 and 10, respectively.

Table 4.5 Frequency and percentage distribution by level of knowledge about substance use

Level of knowledge	**Frequency (n = 380)**	**Percent (%)**
Low level (<6 marks)	158	41.58
Moderate level (6-8 marks)	179	47.11
High level (>8 marks)	43	11.32
Mean = 5.85, SD = 2.25, Min = 0, Max = 10		

The frequency and percentage distribution of the university students by correct answer for each knowledge question is showed in Table 4.6. More than 80% of the university students reported that HIV can be transmitted by Intravenous Drug Users (IDUs) to their sexual partners. 81.05% knew that overdose is a cause of death in IDUs. Nearly 80% of the university students responded that HIV/AIDS is the most threatening infection among IDUs.

However, only 10% of the university students answered that amphetamines (Yaba) cannot make sexual activity more enjoyable. 25.79% of the university students knew that the route of administration of amphetamine. 38.42% of the university students gave correct answer that amphetamines (Yaba) made users alert and active.

Table 4.6 Frequency and percentage distribution by correct answer to indicate knowledge about substance use

Knowledge statement	**Correct Answer**	
	Frequency	**Percent**
Amphetamine (Yaba) use makes the user alert and active	146	38.42
A person who uses amphetamine (Yaba) will be able to enjoy sexual activity more than usual	38	10.00
Diazepam can cause sleepiness and drowsiness	257	67.63
If a drug user stops using drugs, he/ she may suffer from withdrawal symptoms	253	66.58
Overdose is the common cause of death among drug users	308	81.05
Amphetamine (Yaba) can be used by inhalation as well as injection.	98	25.79
Heroin is used by injecting into the veins.	267	70.26

Table 4.6 Frequency and percentage distribution by correct answer to indicate knowledge about substance use (cont.)

Knowledge statement	Correct Answer	
	Frequency	Percent
Hepatitis B and C can be caused by sharing infected needles and syringes among intravenous drug users.	242	63.68
HIV/AIDS is the most threatening infection among intravenous drug users	300	78.95
HIV can be transmitted from intravenous drug users to their sexual partners.	313	82.37

Perception regarding substance use

Perception was classified as high, moderate or low levels as shown in Table 4.7. The results show that 85.79% of the university students had high levels of perception regarding substance use, 13.42% had moderate levels and only 0.79% of the university students had low levels. The mean total score was 34.61 with standard deviation of 3.43. The range of perception scores was from 17 to 39 points.

Table 4.7 Frequency and percentage distribution of university students by level of perception on substance use

Level of perception	Frequency (n=380)	Percentage (%)
Low (<23 marks)	3	0.79
Moderate (23-31 marks)	51	13.42
High (>31 marks)	326	85.79
Mean = 34.61, SD = 3.43, Min = 17, Max = 39		

There were 13 statements for perception; 10 were positive statements and the remaining 3 were negative. The scale was classified into three categories (agree, don't know, disagree). For agree, 3 marks were given if the statement was positive and 1 mark was given if the statement was negative. If the university students answered don't know, 2 marks were given whether the statement was positive or negative, and if the university students chose disagree, 3 marks were given for negative statements.

Table 4.8 shows the university students' perceptions toward using substances. The results show that 72.11% of the university students disagreed with the statement that alcohol drinking is a way to escape from problems. Only 7.37% agreed with that statement. Nearly 90% of the university students agreed that alcohol can easily loose control. More that 90% of the university students agreed that substance abuse can lead to serious health problems. However, 4.47% of them were not sure and 3.68% disagreed. For the statement that the university students could not refuse if their friends offered alcohol or drugs, 66.05% of the university students disagreed but 11.05% agreed. However, 82.89% of the university students believed that if the community neglects and discriminates a drug addict, it will be more difficult for him to stop using drugs, only 6.05% disagreed.

Table 4.8 Percentage of each statement regarding perceptions about substance use

Perception statement	**Agree (%)**	**Not sure (%)**	**Disagree (%)**
Alcohol drinking is a way to escape from problems	7.37	20.53	72.11
Alcohol drinking can easily loose control	85.79	4.47	9.74
I can become drug addict even if I use one time for fun or experiment.	53.68	30.26	16.05
Long term use of amphetamine (Yaba) can deteriorate the user's health.	80.00	16.58	3.42

Table 4.8 Percentage of each statement regarding perceptions about substance use (cont.)

Perception statement	Agree (%)	Not sure (%)	Disagree (%)
Substance abuse can lead to serious health problems.	91.84	4.47	3.68
If I use drug, I can create problems to the community such as violence and crimes.	61.05	28.42	10.53
If I become a drug addict, I will be discriminated by my friends.	60.26	28.42	11.32
If I do not smoke, I can prevent myself from substance abuse.	75.26	13.68	11.05
If I do not drink or smoke, I can be able to save more money	89.47	6.32	4.21
If a drug addicts stops using drugs, he can become a good person to the family and the society.	83.42	12.37	4.21
If I stop smoking, drinking alcohol or using any kind of substance, my life will be very boring.	13.68	15.26	71.05
I cannot say "no" to my friend who offers me alcohol or drugs.	11.05	22.89	66.05
If the community neglects and discriminates a drug addict, it will be more difficult for him to stop using drugs.	82.89	11.05	6.05

4.1.4 Knowledge and perception about risk behavior regarding HIV/AIDS

Table 4.9 shows the frequency and percentage distribution of the university students by level of knowledge about risk behavior regarding HIV/AIDS. There were 7 questions about knowledge of HIV/AIDS. Knowledge levels were classified by Benjamin Bloom's criteria as high, moderate or low level.

Nearly 50% of the university students had high knowledge levels, while 42.37% and 12.37% of the university students had moderate and low levels, respectively. The mean total knowledge score was 5.13 and standard deviation was 1.48. Minimum and maximum scores were 0 and 7, respectively.

Table 4.9 Frequency and percentage distribution of university students by level of knowledge about HIV/AIDS

Level of knowledge	Frequency (n = 380)	Percentage (%)
Low level (<4 marks)	47	12.37
Moderate level (4-5 marks)	161	42.37
High level (>6 marks)	172	45.26
Mean = 5.13, SD = 1.48, Min = 0, Max = 7		

The frequency and percentage distributions of the university students by correct answer for each question of knowledge are shown in Table 4.10. Seven questions were asked to evaluate the university students' levels of knowledge regarding risk behavior of HIV/AIDS. Based on their responses, results reveal that 90% of the university students agreed that a condom can prevent HIV/AIDS infection. More than 90% of the university students knew that eating food together with HIV/AIDS patients cannot lead to HIV/AIDS. Moreover, nearly 85% of the university students answered that mosquitoes cannot be a carrier of HIV/AIDS to the people.

Table 4.10 Frequency and percentage distribution by correct answer of knowledge about HIV/AIDS

Knowledge regarding HIV/AIDS	**Correct Answer**	
	Frequency	**Percent**
Condoms can prevent HIV/AIDS infection	342	90.00
Those who have only one partner without HIV/AIDS, they can prevent from HIV/AID	249	65.53
The person, who looks healthy, can get HIV/AIDS	226	59.47
Mosquito can be a carrier of HIV/AIDS to the people	322	84.79
Eating food with HIV/AIDS patient can get HIV/AIDS	352	92.63
Having sex without using condom with the partner who can trust may be can get HIV/AIDS	226	59.47
Currently have some kind of medicine (anti-retrovirus) to stop HIV/AIDS	231	60.79

Table 4.11 shows the frequency and percentage distribution by level of perception regarding risky behavior of HIV/AIDS. Levels of perception were classified into high, moderate or low as shown in the table 4.11. A small proportion of the university students (0.26%) had low levels of perception. However, 60% of the university students had moderate levels and 39.74% had high levels of perception. The mean score was 21.87 with standard deviation of 2.05. The range of perception score was from 15 to 26.

Table 4.11 Frequency and percentage distribution of university students by level of perception on HIV/AIDS

Levels of perception	Frequency (n=380)	Percentage (%)
Low (<16 marks)	1	0.26
Moderate (16-22 marks)	228	60.00
High (>22 marks)	151	39.74
Mean = 21.87, SD = 2.05, Min = 15, Max = 26		

Table 4.12 shows the university students' perceptions of risk behavior regarding HIV/AIDS. There were 9 statements; 6 were positive statements and the remaining was negative. The scale was classified into three categories (agree, don't know and disagree). For agree, 3 marks were given if the statement was positive and 1 mark was given if the statement was negative. If the university students answered don't know, 2 marks were given whether statement was positive or negative, and if the university students chose disagree, 3 marks were given for negative statements.

Nearly three quarter of the university students (74.21%) agreed that every person has an equal chance to get HIV/AIDS. For the statement that it is easy to use condom, 3.42% of the university students disagreed. 75.79% of the university students believed that condom can protect from HIV/AIDS. Half of the university students (50.00%) answered that there was no need to use condoms with a steady partner. 58.16% of university students were not sure that it was easy to talk about condom use with a partner. Nearly one-half of the university students (49.74%) disagreed that it was embarrassing to buy condoms.

More than 90% of the university students knew that having sex with multiple partners would increase the chance of getting HIV. Only 2.63% of university students disagreed that having sex with commercial sex worker without using condom got the chance of HIV. Nearly 60% of university students were not sure that using condom made sex less enjoyable.

Table 4.12 Percentage of university students to each statement of perceptions regarding HIV/AIDS

Perception statement	Agree (%)	Not sure (%)	Disagree (%)
Every person has equal chance to get HIV/AIDS	74.21	20.26	5.53
It is easy to use condom	55.53	41.05	3.42
Use of condom can protect from HIV/AIDS	75.79	20.00	4.21
There is no need to use condoms with a steady partner	50.00	36.05	13.95
It is easy to talk about condom use with a partner	37.63	58.16	4.21
It is embarrassing to buy condoms	24.74	25.53	49.74
Having sex with multiple partners increase the chance of getting HIV	91.05	6.05	2.89
Having sex with Commercial Sex Worker without using condom get the chance of HIV	88.42	8.95	2.63
Use of condom makes sex less enjoyable	21.05	59.47	19.47

4.1.5 Substance use

Table 4.13 indicates the frequency and percentage distribution by substance use. 60.53% of the university students did not drink alcohol, beer or wine in the last 3 months, or had never used psychoactive drugs in their life time. However, 39.47% of the university students consumed alcohol in the last 3 months and/or had used psychoactive drugs in their life time. 9.21% of university students used both alcohol and psychoactive drugs. Of 380 university students, 38.95% stated that they

consumed alcohol, wine or beer in the last 3 months. 90.26% of the university students had never experienced in psychoactive drugs. Only 9.74% had used psychoactive drugs in their life time.

Table 4.13 Frequency and percentage distribution of university students by substance use

Substance use	Frequency (n= 380)	Percent (%)
Alcohol and/or psychoactive drugs		
No	230	60.53
Yes	150	39.47
Both alcohol and psychoactive drug		
No	345	90.79
Yes	35	9.21
Alcohol drinking behavior		
No	232	61.05
Yes	148	38.95
Psychoactive drug use		
No	343	90.26
Yes	37	9.74

Of 380 university students, 61.05% did not drink alcohol within the previous 3 months, 27.11% drank alcohol occasionally, while 0.53% of the university students drank alcohol everyday. Among those who drank alcohol, half of the university students (50.00%) had never got drunk when drinking alcohol. 2.70% of the university students always got drunk and 47.30% got drunk sometimes when they drank alcohol.

Regarding the age of initiation for alcohol drinking, 54.73% of the university students reported that they were less than 18 years old when they started drinking alcohol. The remaining said that they drank alcohol for their ages of 18 years

and above. 64.19% claimed that the main reason for drinking alcohol was peer pressure. More than 10% of the university students stated that drinking alcohol could relieve stress at school or home.

Table 4.14 Frequency and percentage distribution of university students by alcohol drinking behavior

Alcohol drinking behavior	Frequency (n= 380)	Percentage (%)
Drinking alcohol within 3 months		
Every day	2	0.53
2-3 times per week	6	1.58
Once a week	8	2.11
Occasional	103	27.11
Very rarely	29	7.63
Never	232	61.05
Get drunk when drinking alcohol		
Always	4	2.70
Sometimes	70	47.30
Never	74	50.00
Age of initiation		
Less than 18 years	81	54.73
18 years and above	67	45.27
The main reason for drinking alcohol		
My friends make me drink	95	64.19
I see my parents drinking	2	1.35
Drinking makes me feel I 'm matured enough	9	6.08
Relieves stress at school/ home	15	10.14
Social dealing	27	18.24

Table 4.14 Frequency and percentage distribution of university students by alcohol drinking behavior (cont.)

Alcohol drinking behavior	Frequency (n= 380)	Percentage (%)
Drinker category		
Heavy drinker	4	2.70
Moderate drinker	28	18.92
Mild drinker	116	78.38
Drinking belief		
Feel good about yourself	25	16.89
Lose yourself control	35	23.65
Express your feelings	77	52.03
Become accepted in your peer group	11	7.43

For psychoactive drug use, 5.53% of the university students had used Diazepam (without a doctor's prescription); 5.26% had used marijuana; and 0.26% were injection drug users. Of 380 university students, 5% used psychoactive drugs for relaxing when they felt stress or tension. The results are shown in Table 4.15.

Table 4.15 Frequency and percentage distribution of university students who use psychoactive drugs

Psychoactive drug user	Frequency (n=380)	Percentage (%)
Diazepam usage (without doctors prescription)	21	5.53
Marijuana usage	20	5.26
ATS usage	2	0.53
Heroin usage	2	0.53
Usage injection drugs	1	0.26

4.1.6 Risk behavior regarding HIV/AIDS

Of 380 university students, 85.79% had never had sexual intercourse, but 14.21% of the university students mentioned that they had. Of the university students who claimed sexual experiences, 75.93% of the university students had only one partner. However, 24.07% of the university students had more than one partner. For the first sexual partner, 83.33% of the university students had engaged in sexual intercourse with their boyfriends/girlfriends or husbands/wives. Nearly 13% of the university students had had sexual activity with commercial sex workers for their first sex and only 3.70% of them answered that friends were their first sexual partners.

Regarding the age for the first sexual intercourse, 68.52% of the university students reported that their ages of sexual initiation were 18 years and above, while 31.48% claimed that their ages for the first sexual intercourse were less than 18 years old. Of 54 university students who had had sexual experiences, 61.11% did not use a condom for their first intercourse, but 38.89% did.

With respect to the partners for the last sexual intercourse, three quarter of the university students (75.47%) mentioned that boyfriends/girlfriends or lovers were their last partners. However, 15.09% of the university students reported that CSWs were their last partners. For the question concerning condoms usage, more than one-half of the university students (52.84%) responded that they used condoms for their last sexual intercourse. For accessibility of condoms, 74.07% of the university students answered that it was convenient to buy condoms.

Table 4.16 Frequency and percentage distribution of university students by sexual behavior of HIV/AIDS

Risk behavior of HIV/AIDS	Frequency (n)	Percentage (%)
Sexual Intercourse (n= 380)		
No	326	85.79
Yes	54	14.21

Table 4.16 Frequency and percentage distribution of university students by risk behavior of HIV/AIDS (cont.)

Risk behavior of HIV/AIDS	Frequency (n)	Percentage (%)
Number of sexual partners (n=54)		
<2 partners	41	75.93
≥ 2 partners	13	24.07
Age for first sexual intercourse (n=54)		
<18 years	17	31.48
18 years and above	37	68.52
Willing or force for first sexual intercourse (n=54)		
Be willing	51	94.44
Force	3	5.56
Partner for the first time sexual intercourse (n=54)		
Boyfriend/girlfriend or husband/wife	45	83.33
Commercial sex worker	7	12.96
Friends	2	3.70
Used condom for first sexual intercourse (n=54)		
No	33	61.11
Yes	21	38.89
Partner for the last sexual intercourse (n= 53)		
Boyfriend/ girlfriend or lover	40	75.47
Commercial sex worker	8	15.10
Others	5	9.43
Used condom in the last sexual intercourse (n= 53)		
No	25	47.16
Yes	28	52.84
Is it convenient to buy condom? (n= 54)		
Yes	40	74.07
No	9	16.67
Never use it	5	9.26

With respect whether they had sexual intercourse in the previous year and condom usage is shown in table 4.17. About 83.33% of the university students had sexual activity in the last 12 months but 16.67% had not. Among those who claimed sexual intercourse within last year, only 37.78% of them used condoms in every sexual activity. However, 22.22% of the university students did not use condoms in the last 12 months and 40% used condoms sometimes.

Table 4.17 Frequency and percentage of university students by risk behavior of HIV/AIDS among the university students who had sexual activity in the last 12 months.

Risk behavior of HIV/AIDS	Frequency	Percentage
Sexual intercourse within last one year (n= 54)		
No	9	16.67
Yes	45	83.33
Condom use in last 12 months		
Always	17	37.78
Sometimes	18	40.00
Never use it	10	22.22

Among 45 university students who had sexual intercourse in the last 12 months, 83.33% engaged in sex with their husbands/wives or boyfriends/girlfriends and 33.33% of university students had sexual activity with commercial sex workers. 22.22% of them had had sex with acquainted man/woman in the last 12 months.

Table 4.18 Frequency and percentage of university students by type of partner in the last 12 months

Type of partner in the last 12 months	Frequency (n=45)	Percentage (%)
Husband/ wife or boyfriend/ girlfriend	39	86.67
Acquainted man/ woman	10	22.22
Commercial sex workers	15	33.33

Of those who had sex with their husbands/wives or boyfriends/girlfriends, only 33.33% of university students used condoms consistently. However, consistent condom usage was increased for acquainted man/woman and commercial sex workers. These figures are shown in table 4.19. There were 15 university students who had sex with commercial sex workers last years. Among them, 86.67% of the university students used condoms consistently while engaging in sex with CSWs. But only 6.67% of the university students never used condoms while engaging sex with CSWs.

Table 4.19 Frequency and percentage of university students by frequency of condom usage according to type of partner

Partner	Condom Use					
	Always		Sometimes		Never	
	(n)	(%)	(n)	(%)	(n)	(%)
Husband/ wife or boyfriend/ girlfriend	13	33.33	17	43.59	9	23.08
Acquainted man/ woman	8	80.00	1	10.00	1	10.00
Commercial sex workers	13	86.67	1	6.67	1	6.67

Table 4.20 shows the frequency and percentage distribution of university students who had sex under the influence of substance in the last 12 months. 38.89% of the university students had engaged in sex after drinking alcohol, whisky, wine or beer. 11.11% of university students had sexual intercourse after using psychoactive drugs in the last 12 months.

Table 4.20 Frequency and percentage of university students who had sex under the influence of alcohol and psychoactive drugs in the last 12 months.

Risk behavior	Frequency (n)	Percentage (%)
Sexual intercourse under the influence of alcohol	21	38.89
Sexual intercourse under the influence of psychoactive drugs	6	11.11

There were 21 university students who had sex under the influence of alcohol in the last 12 months. Among them, more than one-half (57.14%) used condoms in every sexual intercourse. However, 19.05% of the university students did not use condoms while engaging in sexual intercourse after drinking alcohol. Among the university students who had sex under the influence of psychoactive drug, 66.67% used condoms consistently. The same proportion (16.67%) said that they sometimes and never used condoms while engaging in sex after using psychoactive drugs.

Table 4.21 Frequency and percentage of condom usage by the university students who had sex under the influence of alcohol and psychoactive drugs in the last 12 months.

Risk behavior	Condom Use					
	Always		Sometimes		Never	
	(n)	(%)	(n)	(%)	(n)	(%)
Sexual intercourse under the influence of alcohol	12	57.14	5	23.81	4	19.05
Sexual intercourse under the influence of psychoactive drug	4	66.67	1	16.67	1	16.67

4.2 Inferential statistical analysis

4.2.1 Bivariate Analysis

The association between socio demographics characteristics and substance use

Table 4.22 shows the association between substance use and socio-demographic characteristics of the university students. Substance used by male university students was higher (67.58%) than by females (13.64%). Moreover, male university students were 13.20 times more likely to use psychoactive substances than female university students.

Regarding the educational level and substance use, the third year university students had 1.33 times higher chance of substance use than the first year university students. Conversely, first year university students were more likely to use psychoactive substances in compared with the second and fourth year university students.

Table 4.22 Association between socio-demographic variables and substance use

Socio-demographic variables	substance use				Crude OR	95% CI	p-value
	No		Yes				
	(n)	(%)	(n)	(%)			
Age							
<20 years	156	61.18	99	38.82	1		
20-24 years	74	59.20	51	40.80	1.09	0.70-1.68	0.711
Sex							
Female	171	86.36	27	13.64	1		
Male	59	32.42	123	67.58	13.20	7.92-22.01	<0.001**

Table 4.22 Association between socio-demographic variables and substance use (cont.)

Socio-demographic variables	substance use				Crude OR	95% CI	p-value
	No		Yes				
	(n)	(%)	(n)	(%)			
Religion							
Buddhist	206	60.23	136	39.77	1		
Others	24	63.16	14	36.84	0.88	0.44-1.77	0.727
Race							
Bamar (Myanmar)	203	61.33	128	38.67	1		
Non-bamar (Non-Myanmar)	27	51.10	22	44.90	1.29	0.71-2.37	0.406
Educational levels							
1st year university student	58	58.00	42	42.00	1		
2nd year university student	61	61.00	39	39.00	0.88	0.50-1.55	0.666
3rd year university student	51	51.00	49	49.00	1.33	0.76-2.32	0.321
4th year university student	60	75.00	20	25.00	0.46	0.24-0.88	0.018 *
Marital status							
Married	5	71.43	2	28.57	1		
Single	225	60.32	148	39.68	1.64	0.31-8.59	0.555
Monthly allowance							
Less than 15000 kyats	51	67.11	25	32.89	1		
15001 kyats - 30000 kyats	106	61.99	65	38.01	1.25	0.71-2.21	0.441
30001 kyats – 100000 kyats	73	54.89	60	45.11	1.68	0.93-3.02	0.085

* Significant at p-value <0.05

** Significant at p-value <0.001

Table 4.23 indicates the results of the analysis between social factors and substance use. The university students who came from lower income families, 31.11% used psychoactive substances. Of those who came from higher income families, more than one-half of the university students (50.62%) used psychoactive substances. The higher the level of income, the higher the likelihood of substance use.

Of those who were not happy living with their families, 73.33% of them used psychoactive substances. The university students who were not happy living with their families were 4.47 times more likely to use psychoactive substances than the university students who lived happily with their families.

Table 4.23 Association between social factor variables and substance use

Social factor variables	substance use				Crude OR	95% CI	p-value
	No		Yes				
	(n)	(%)	(n)	(%)			
Father's occupation							
Employed	209	60.06	139	39.94	1		
Unemployed	3	42.86	4	57.14	0.74	0.54-1.02	0.069
Mother's occupation							
Employed	91	57.23	68	42.77	1		
Housewife	137	63.13	80	36.87	0.73	0.50-1.07	0.111
Family income (estimated)							
Less than 100000 kyats	62	68.89	28	31.11	1		
100001 - 300000 kyats	128	61.24	81	38.76	1.40	0.83-2.37	0.209
300001 kyats and above	40	49.38	41	50.62	2.27	1.22-4.23	0.010 *
Marital status of parents							
Stay together	198	58.93	138	41.07	1		
Others	32	72.73	12	27.27	0.54	0.27-1.08	0.082
Guardianship							
Live with parents	198	61.88	122	38.13	1		
Live with others	32	53.33	28	46.67	1.42	0.82-2.47	0.216
Discussing the serious affects of substance abuse							
No	72	60.50	47	39.50	1		
Yes	158	60.54	101	39.46	1	0.64-1.56	0.995

Table 4.23 Association between social factor variables and substance use (cont.)

Social factor variables	substance use				Crude OR	95% CI	p-value
	No		Yes				
	(n)	(%)	(n)	(%)			
Living happily with family							
Yes	226	61.92	139	38.08	1		
No	4	26.67	11	73.33	4.47	1.40-14.32	0.012 *

* Significant at p-value <0.05

Among the university students who used substances, 56.35% of them confirmed that their family members drank alcohol, whereas 43.65% of the university students who did not consume alcohol in the last 3 months and had not used psychoactive drugs reported that their family members also drank alcohol. On the other hand, the university students who reported that their family members were not drinkers, only 21.31% used substances. Therefore, it suggests that the university student's substance use may be influenced by what the university students saw and/or learned from his/ her family members.

Of the university students who answered that they did not have any family members who used psychoactive drugs, only 34.45% used psychoactive substances. However, the university students who stated that there were drug abuses in their families, 71.15% of the university students became substance users.

Of the university students who mentioned that there were smokers in their families, more than one-half of the university students (52.87%) used psychoactive substances. On the other hand, the university students who stated that there were no smokers in their family members, only 28.16% of the university students used psychoactive substances. The university students were more likely to use substances for those having alcohol drinker, drug abuse and smoker in their families, with odd ratios of 4.77, 4.69 and 2.86, respectively.

Table 4.24 Association between family influence and substance use

Family influence variables	substance use				Crude OR	95% CI	p-value
	No		Yes				
	(n)	(%)	(n)	(%)			
Drinking alcohol in family members							
No	144	78.69	39	21.31	1		
Yes	86	43.65	111	56.35	4.77	3.03-7.49	<0.001 *
Drug use in family members							
No	215	65.55	113	34.45	1		
Yes	15	28.85	37	71.15	4.69	2.47-8.92	<0.001 *
Smoking in family members							
No	148	71.84	58	28.16	1		
Yes	82	47.13	92	52.87	2.86	1.87-4.38	<0.001 *

* Significant at p-value <0.001

Of the university students who used substances, 60.70% of them had friends who drank alcohol; whereas for those who did not use substance (alcohol in the last 3 months and psychoactive drug for the whole life), 39.30% reported that their friends drank alcohol. On the other hand, 84.36% of university students who did not use substance reported that their friends did not drink alcohol. This positively indicates that university students who were substance users had higher proportion of friends who drank alcohol and the university students who did not use substances had higher proportion of friends who did not drink alcohol.

The university students who stated that there were psychoactive drug users in their friends, 63.64% of university students used substances. However, the university students who did not have drug abuse in their friends, only 34.39% used substance. Therefore, the university student's substance use may be influenced by what the university students saw or learned from his/ her friends.

Of the university students who had smokers in their friends, 54.31% of the university students became substance users whereas 45.69% of them did not consume alcohol in the last 3 months and use psychoactive drug for life long. On the other hand, the university students who claimed that they had no friends who smoked, only 16.22% of them used substance.

Table 4.25 Association between peer influence and substance use

Peer influence variables	substance use				Crude OR	95% CI	p-value
	No		Yes				
	(n)	(%)	(n)	(%)			
Drinking alcohol in friends							
No	151	84.36	28	15.64	1		
Yes	79	39.30	122	60.70	8.33	5.09-13.63	<0.001 *
Drug use in friends							
No	206	65.61	108	34.39	1		
Yes	24	36.36	42	63.64	3.34	1.92-5.80	<0.001 *
Smoking in friends							
No	124	83.78	24	16.22	1		
Yes	106	45.69	16	54.31	6.14	3.70-10.20	<0.001 *

* Significant at p-value <0.001

Table 4.26 presents the association between peer influence and substance use. The university students who were asked to drink alcohol by their friends, 72.16% of the university students used psychoactive substances. They were also 20.40 times more likely to use psychoactive substances than the university students who were not asked to drink alcohol together by their friends.

With regard to get rewards from friends if they smoke, drink alcohol or use drug with them, 66.67% of substance users got rewards. The university students who did not get any rewards from friends, 37.64% of the university students became substance users and 62.36% of them did not use substance.

The university students who received punishment, 56.36% of the university students became substance users while 43.64% of them did not use psychoactive substances. Only 36.62% of the university students became substance users although they had never received punishment, for not smoking, drinking alcohol or using drugs together with their friends. The university students who got punishment from friends, for not smoking, drinking alcohol or using drugs together with them were 2.24 times more likely to use substances than the university students who did not.

Table 4.26 Association between peer influence and substance use

Peer influence variables	**substance use**				**Crude OR**	**95% CI**	**p-value**
	No		**Yes**				
	(n)	**(%)**	**(n)**	**(%)**			
Spend leisure time together with friends							
No	21	77.78	6	22.22	1		
Yes	209	59.21	144	40.79	2.41	0.95-6.12	0.064
Asked to drink alcohol together with friends							
No	181	88.73	23	11.27	1		
Yes	49	27.84	127	72.16	20.40	11.83-35.17	<0.001**
Get reward from friends, if smoking, drinking alcohol or use drug with them?							
No	222	62.36	134	37.64	1		
Yes	8	33.33	16	66.67	3.31	1.38-7.95	0.007 *
Received a punishment from friends, for not smoke, drink alcohol or use drug with them							
No	206	63.38	119	36.62	1		
Yes	24	43.64	31	56.36	2.24	1.25-3.99	0.006 *

* Significant at p-value <0.01

The association between substance use and knowledge regarding substance use is presented in table 4.27. The university students who had high knowledge levels, 37.39% of them used substances. However, the university students who had low knowledge levels, 42.41% used substances. The university students who had low knowledge were 1.23 times more likely to use substances.

Table 4.27 Association between level of knowledge regarding substance use and substance use

Level of knowledge	**substance use**				**Crude OR**	**95% CI**	**p-value**
	No		**Yes**				
	(n)	**(%)**	**(n)**	**(%)**			
High level (≥6marks)	139	62.61	83	37.39	1		
Low level (<6marks)	91	57.59	67	42.41	1.23	0.81-1.87	0.324

The result in Table 4.28 indicates that only 28.90% of the university students who had high perception levels used psychoactive substances whereas 53.70% of the university students who had low perception levels regarding substance use grew up as substance users. The university students who had low levels of perception were more likely to use substances than the university students who had high perception (OR = 2.85, 95% CI 1.86-4.37).

Table 4.28 Association between level of perception regarding substance use and substance use

Level of perception	**substance use**				**Crude OR**	**95% CI**	**p-value**
	No		**Yes**				
	(n)	**(%)**	**(n)**	**(%)**			
High level (≥35marks)	155	71.10	63	28.90	1		
Low level (<35marks)	75	46.30	87	53.70	2.85	1.86-4.37	<0.001 *

* Significant at p-value <0.001

4.2.2 Association between socio-demographic characteristic and risk behavior regarding HIV/AIDS

Since the sexual risk of HIV/AIDS in this study can depend on the university students who did not use condoms consistently in the last 12 months, we developed an indicator considering those university students who had sexual intercourse in the last 12 months, but did not use condoms regularly. We assumed that the university students who had never had sex mean no sexual risk of HIV/AIDS.

In this research, 54 university students reported that they had sexual experiences. Of those who claimed that they had sexual experiences, 9 university students did not engage in sex in the last 12 months. In this research, those who did not have sex in the last 12 months were not included in the analysis for the risk behavior of HIV/AIDS.

Table 4.29 shows the results of analysis between socio-demographic characteristics and risk behavior of HIV/AIDS. The university students who were between the ages of 20-24 years had more risk behavior of HIV/AIDS than those the university students who were under the age of 20 years (OR= 3.97, 95% CI= 1.77-8.89). Female university students who had risk behavior regarding HIV/AIDS were fewer (4.04%) than the male university students (11.56%). Male university students were 3.10 times more likely to have risk of HIV/AIDS than the female university students.

Risk behavior was observed to be relatively lower in Buddhist (7.51%) than other religious groups (7.89%). Those university students who were Bamar (Myanamr) had more risk behavior (7.74%) than those who were other races (6.25%). With respect to the educational levels of university students, it was observed that the 3rd and 4th year university students had more risk behavior of HIV/AIDS (8%) and (8.75%), respectively than those who were studying in 1st year and 2nd year (6.38%) and (7.22%), respectively. Compared to first year university students, the odds of having the risk of HIV/AIDS were higher in the second year (OR= 1.14), the third year (OR= 1.28) and the fourth year university students (OR= 1.41).

The data illustrates that married university students had higher risk of HIV/AIDS (57.14%) than those who were singles (6.59%). Concerning the association between monthly allowance and risk behavior of HIV/AIDS, it was observed that those university students who received less than 15000 kyats had more risk (9.59%) than the group receiving between 15001-30000 kyats (7.23%) and above 30001 kyats (6.82%).

Table 4.29 Association between socio-demographic variables and risk behavior of HIV/AIDS

Socio-demographic variable	Risk behavior				Crude OR	95% CI	p-value
	Yes		No				
	(n)	(%)	(n)	(%)			
Age							
<20 years	10	4.07	236	95.93	1		
20-24 years	18	14.40	107	85.60	3.97	1.77-8.89	0.001 *
Sex							
Female	8	4.04	190	95.96	1		
Male	20	11.56	153	88.44	3.10	1.33-7.24	0.009 *
Religion							
Buddhist	25	7.51	308	92.49	1		
Others	3	7.89	35	92.11	1.06	0.30-3.68	0.932
Race							
Bumar (Myanmar)	25	7.74	298	92.26	1		
Non-bumar (Non-Myanmar)	3	6.25	45	93.75	0.79	0.23-2.74	0.716
Educational levels							
1st year university student	6	6.38	88	93.62	1		
2nd year university student	7	7.22	90	92.78	1.14	0.37-3.53	0.819
3rd year university student	8	8.00	92	92.00	1.28	0.43-3.82	0.664
4th year university student	7	8.75	73	91.25	1.41	0.45-4.37	0.555

Table 4.29 Association between socio-demographic variables and risk behavior of HIV/AIDS (cont.)

Socio-demographic variable	Risk behavior				Crude OR	95% CI	p-value
	Yes		No				
	(n)	(%)	(n)	(%)			
Marital status							
Single	24	6.59	340	93.41	1		
Married	4	57.14	3	42.86	18.89	4.00-89.28	<0.001**
Monthly allowance							
Less than 15000	7	9.59	66	90.41	1		
15001- 30000 kyats	12	7.23	154	92.77	0.73	0.28-1.95	0.536
30001 kyats – 100000 kyats	9	6.82	123	93.18	0.69	0.25-1.94	0.481

* Significant at p-value <0.01

** Significant at p-value <0.001

Table 4.30 shows the association between levels of knowledge regarding HIV/AIDS and risk behavior of HIV/AIDS. The university students who had low levels of knowledge regarding HIV/AIDS were 1.20 times more likely to have risk of HIV/AIDS than their counterpart.

Table 4.30 Association between level of knowledge regarding HIV/AIDS and risk behavior of HIV/AIDS

Level of knowledge	Risk behavior				Crude OR	95% CI	p-value
	Yes		No				
	(n)	(%)	(n)	(%)			
Low level (<6marks)	14	6.97	187	93.03	1		
High level (≥6marks)	14	8.24	156	91.76	1.20	0.55-2.59	0.645

Table 4.31 indicates the association between level of perception regarding HIV/AIDS and risky behavior of HIV/AIDS. The university students who had low level of perception were 1.54 times more likely to have risk behavior regarding HIV/AIDS than the university students who had high perception levels.

Table 4.31 Association between level of perception regarding HIV/AIDS and risky behavior of HIV/AIDS

Level of perception	Risk behavior				Crude OR	95% CI	p-value
	Yes		No				
	(n)	(%)	(n)	(%)			
Low level (16marks-22marks)	14	6.31	208	93.69	1		
High level (>22 marks)	14	9.40	135	90.60	1.54	0.71-3.33	0.272

Table 4.32 illustrates the association between substance use and risk behavior regarding HIV/AIDS. The university students who used substances (alcohol and/or psychoactive drug), 16.20% of them had risky behavior of HIV/AIDS while 83.80% had no risk of HIV/AIDS. The university students who used substances (both alcohol and psychoactive drugs), 39.39% of the university students had risky behavior regarding HIV/AIDS while 60.61% had no sexual risk regarding HIV/AIDS. The crude OR revealed that alcohol consumption and/or psychoactive drug use (OR, 8.66; 95% CI, 3.21-23.36) and both alcohol consumption and psychoactive drug use (OR, 14.00; 95% CI, 5.87-33.38) were significantly associated with risk behavior regarding HIV/AIDS.

Table 4.32 Association between substance use and risk behavior of HIV/AIDS

Substance use	Risk behavior				Crude OR	95% CI	p-value
	Yes		No				
	(n)	(%)	(n)	(%)			
Alcohol and/ or psychoactive drugs use							
No	5	2.18	224	97.82	1		
Yes	23	16.20	119	83.80	8.66	3.21-23.36	<0.001 *
Both alcohol and psychoactive drugs							
No	15	4.44	323	95.56	1		
Yes	13	39.39	20	60.61	14.00	5.87-33.38	<0.001 *

* Significant at p-value <0.001

4.2.2 Multivariate analysis

Full model of multiple logistic regression for psychoactive substance use

Multiple logistic regression analysis was done to assess the association between independent variables and substance used by the university students. All the independent variables were included in the initial full models. The results of full model analysis are reported in Table 4.33.

It was found that there were significant associations between substance use and six independent variables such as, sex, discussing the serious affects of substance use, drinking alcohol in family members, drug use in family members, drinking alcohol in friends, asked to drink alcohol together with friends, when adjusted for other factors in the model.

Table 4.33 Multiple logistic regression of all independent variables and substance use

Independent variables	Substance use			
	Adjusted OR	95% CI for OR		p-value
		Lower	Upper	
Age				
≥ 20 years	0.66	0.30	1.47	0.315
Sex				
Male	4.24	1.97	9.11	<0.001***
Religion				
Non-buddhist	0.61	0.18	2.05	0.420
Race				
Non-bumar (Non-Myanmar)	2.04	0.76	5.49	0.156
Educational level				
2nd year university student vs 1st year	1.27	0.52	3.10	0.593
3rd year university student vs 1st year	0.87	0.34	2.24	0.775
4th year university student vs 1st year	0.64	0.22	1.87	0.416
Marital status				
Single	3.98	0.36	43.76	0.259
Monthly allowance				
15001 kyats – 30000 kyats vs <15000 kyats	1.74	0.70	4.36	0.236
30001 kyats – 100000 kyats vs < 15000 kyats	1.42	0.52	3.93	0.495
Father's occupation				
Unemployed	0.57	0.30	1.07	0.081
Mother's occupation				
Housewife	0.91	0.48	1.72	0.765
Family income (estimated)				
100001–300000 kyats vs <100000 kyats	0.76	0.31	1.86	0.551
300001 kyats and above vs <100000 kyats	1.80	0.61	5.31	0.288
Marital status of parents				
Parents not stayed together	1.31	0.30	5.70	0.717

Table 4.33 Multiple logistic regression of all independent variables and substance use (cont.)

Independent variables	Substance use			
	Adjusted OR	95% CI for OR		p-value
		Lower	Upper	
Guardianship				
Live with others	0.83	0.33	2.11	0.699
Discussing the serious affects of substance abuse				
Yes	2.31	1.13	4.72	0.022 *
Living happily with family				
No	3.34	0.52	21.27	0.202
Drinking alcohol in family members				
Yes	2.70	1.33	5.50	0.006 **
Drug use in family members				
Yes	4.37	1.47	13.03	0.008 **
Smoking in family members				
Yes	1.10	0.52	2.33	0.799
Drinking alcohol in friend				
Yes	3.04	1.40	6.61	0.005 **
Drug use in friend				
Yes	0.64	0.25	1.63	0.350
Smoking in friend				
Yes	1.59	0.68	3.76	0.286
Spend leisure time together with friends				
Yes	2.67	0.69	10.35	0.155
Asked to drink alcohol together with friends				
Yes	6.27	2.82	13.94	<0.001***
Get reward from friends, if smoking, drinking alcohol or use drugs with friends				
No	1.27	0.34	4.70	0.717

Table 4.33 Multiple logistic regression of all independent variables and substance use (cont.)

Independent variables	Substance use			
	Adjusted OR	95% CI for OR		p-value
		Lower	Upper	
Received a punishment from friends, for not smoke, drink alcohol or use drugs with friends				
Yes	1.59	0.64	3.96	0.315
Knowledge regarding substance use				
Low level	1.31	0.66	2.61	0.434
Perception regarding substance use				
Low level	1.10	0.56	2.14	0.782

* Significant at p-value <0.05

** Significant at p-value <0.01

*** Significant at p-value <0.001

Final model of multiple logistic regression of substance use

When testing the association for the final model using multiple logistic regression, it was found that no association between substance use and discussing serious affects of substance use. However, there were associations between sex, alcohol drinking in family members, drug use in family members, alcohol drinking in friends, asked to drink alcohol together by friends. The results are presented in Table 4.34.

The result shows that there was a strong significant association between sex and substance use (p-value <0.001). Male university students were 4.68 times more likely to use psychoactive substances than their female counterpart. Similar, the university students who were ask to drink alcohol together by friends were 5.68 times more likely to have chance of psychoactive substance use than the one who were not been asked by their friends (p-vale <0.001)

There was also significant associations between family influence (alcohol drinking in family members and drug use in family members) and peer influence (alcohol drinking in friend) and psychoactive substance use (p-value= 0.001, 0.012 and 0.002 respectively). The university students who had alcoholic and drug abuse in their families were 2.65 times and 3.10 times more likely to use psychoactive substances than their counterpart. Similarly, of the university students whose friends were alcohol drinks were 2.72 times more likely to use psychoactive substances than the university who did not have that kind of friends.

Table 4.34 The final multiple logistic regression analysis for substance use

Predictors	**Substance use**			
	Adjusted OR	**95% CI for OR**		**p-value**
		Lower	**Upper**	
Sex				
Male	4.68	2.40	9.12	<0.001***
Discussing the serious affects of substance abuse				
Yes	1.88	0.98	3.57	0.056
Drinking alcohol in family members				
Yes	2.65	1.45	4.84	0.001**
Drug use in family members				
Yes	3.10	1.28	7.48	0.012 *
Drinking alcohol in friend				
Yes	2.72	1.42	5.19	0.002**
Asked to drink alcohol together with friends				
Yes	5.68	2.78	11.60	<0.001***

* Significant at p-value <0.05

** Significant at p-value <0.01

*** Significant at p-value <0.001

Full model of multiple logistic regression for risk behavior of HIV/AIDS

All the independent variables for risk behavior of HIV/AIDS were put in the initial full model of multiple logistic regression to determine the relationship between independent variables and the outcome variable. The results of the analysis are presented in Table 4.35.

Table 4.35 Multiple logistic regression of all independent variables and risk behavior of HIV/AIDS

Independent variables	Risk behavior of HIV/AIDS			
	Adjusted OR	95% CI for OR		p-value
		Lower	Upper	
Age				
≥ 20 years	4.97	1.60	15.40	0.005**
Sex				
Male	0.86	0.27	2.76	0.800
Religion				
Non-Buddhist	1.41	0.25	7.82	0.696
Race				
Non-bumar (Non-Myanmar)	0.39	0.07	2.30	0.298
Educational level				
2nd year university student vs 1st year	1	0.26	3.83	0.994
3rd year university student vs 1st year	0.65	0.15	2.75	0.560
4th year university student vs 1st year	0.72	0.15	3.48	0.681
Monthly allowance				
15001 kyats – 30000 kyats vs <15000 kyats	0.71	0.23	2.25	0.561
30001 kyats – 100000 kyats vs <15000 kyats	0.69	0.20	2.37	0.561
Knowledge regarding HIV/ AIDS				
High level	1.60	0.62	4.10	0.327

Table 4.35 Multiple logistic regression of all independent variables and risk behavior of HIV/AIDS (cont.)

Independent variables	Risk behavior of HIV/AIDS			
	Adjusted OR	95% CI for OR		p-value
		Lower	Upper	
Perception regarding HIV/ AIDS				
High level	1.34	0.54	3.33	0.531
Substance use (alcohol and/or psychoactive drugs)				
Yes	5.42	1.49	19.66	0.010 *
Both alcohol and psychoactive drugs				
Yes	6.15	2.13	17.74	0.001 **

* Significant at p-value <0.05

** Significant at p-value <0.01

Final model of multiple logistic regression of substance use

Table 4.36 shows that there were significant associations between risk behavior of HIV/AIDS and age, substance use (alcohol and/ or psychoactive drugs), and both substance use. The university students who consumed both alcohol and psychoactive drugs were 5.84 times more likely to have risk behavior regarding HIV/AIDS (unprotected sex) than the university students who did not use psychoactive substances. The university students who used substances (alcohol and/ or psychoactive drugs) were 4.68 times more likely to have risk behavior regarding HIV/AIDS than their counterpart. The university students whose ages were between 20-24 years old were 3.71 times more chance of having risk behavior regarding HIV/AIDS than the university students whose ages were less than 20 years.

Table 4.36 The final multiple logistic regression analysis for risk behavior of HIV/AIDS

Predictors	**Risk behavior of HIV/AIDS**			
	Adjusted OR	**95% CI for OR**		**p-value**
		Lower	**Upper**	
Age				
≥ 20 years	3.71	1.55	8.88	0.003 *
Substance use (alcohol and/or psychoactive drugs)				
Yes	4.69	1.54	14.24	0.006 *
Both alcohol and psychoactive drugs				
Yes	5.84	2.17	15.69	<0.001**

* Significant at p-value <0.01

** Significant at p-value <0.001

CHAPTER V
DISCUSSION

This study was undertaken to assess the association of substance use to risk behavior of HIV/AIDS among youth, in Yangon, Myanmar. The study population included 380 university students who were currently studying in Dagon University, Yangon, Myanmar.

5.1 Methodology

This study was a cross-sectional descriptive study. The sample size of the study was calculated using a formula for estimating population proportion. The sample size required for this study was 380. All the samples were selected by an interval of 3. Therefore every three university students who came to the recreational centre of the Dagon University was selected as a sample. Data was collected using a structured self-administered questionnaire. The questionnaire was translated into Myanmar language and pre tested with randomly selected 30 university students in the West Yangon University who had nearly the same characteristics and general background as the targeted study group. The pretest was done twice because KR20 for knowledge of HIV/AIDS was very low (0.43) in the first pretest. Questionnaires were reviewed and revised based upon the findings of pre test.

Ethical clearance for the study was obtained from Mahidol University Institutional Review Board (MU-IRB). Participation of students was on voluntary basis and the answers were anonymous. The questionnaire was distributed if the student was willing to participate in this study and was dropped to the box after completing the questionnaire.

5.2 General characteristics of University students

For the personal profile, 67.11% of the university students were below 20 years old and 32.89% were in 20-24 years old group. Among them, 52.11% were female and 47.89% were male. Buddhism was the most commonly reported religion of the university students (90%), followed by Christian (6.58%), Islam (2.89%) and only 0.53% was Hindu. Approximately 98% of the university students stated that they were single. When asked about monthly allowances, 20% of the university students got less than 15000 kyats and 35% stated that they received between 30001 kyats – 100000 kyats.

For parents' occupations, 91.5% of fathers were employed while the same goes with mother at 41.9%. With regard to their monthly family incomes, 23.68% of the university students came from low income group and 21.32% came form high income families while 55% reported that their families earned between 100001 kyats – 300000 kyats. When it came to guardianship, 84.21% of the university students lived with their parents and 88.42% reported that their parents stayed together.

For the question whether they lived happily with their respective families, majority of the university students (96.05%) lived happily with their families while only 3.95% of the university students were not happy living with their families. Among 380 university students, 68.68% of them discussed about the serious effects of substance use with their families but 31.32% had never discussed about that topic in their families.

We have found that among 380 university students, the university students who used substance (alcohol and/or psychoactive drugs) were 39.47%. 9.21% of the university students consumed alcohol in the last 3 months and used psychoactive drugs life time, 38.95% were alcohol drinkers and 9.74% were psychoactive drug users.

The prevalence of alcohol drinking among university students was 38.95%, this figure was approximately 8% higher compared to the lifetime prevalence rate of

alcohol at 31.2% studied conducted by Pe TT, et al (20). The higher rate of alcohol consumption might be due to that alcohol is available everywhere and is easy to buy because it is not illicit substance and can be bought from any convenient stores. Having shops selling alcohol in communities had effects on alcohol drinking in adolescents. Kongpanichtrakul P (77) also found that having shops selling the substance was a factor influential to substance use among students. When assessing reasons for alcohol drinking, most of the university students (64.19%) answered that their friends made them or encouraged them to drink. 18.24% stated that social dealing was common reason for alcohol drinking, and 10.14% claimed that drinking alcohol was a way to relieve stress either at school and/or at home.

The prevalence of psychoactive drug use among the university students as revealed in this study was 9.74%. This figure was relatively higher compared to the life time prevalence rate at 8.8% in 1997 (20). This might be due to the ease with which dependence-producing drugs may be obtained in a given locality; social acceptance of the use of drugs to relieve discomfort or to modify mood or perception (62).

In this study, there were 37 university students had experienced drug consuming in life time. Types of drug taken by the university students in this study were Diazepam (5.53%), Marijuana (5.26%), Amphetamine type stimulant (0.53%), Heroin (0.53%), and history of injection drugs was reported only one student (0.26%). The results could be compared with the results obtained from the drug use survey among high school students of border area townships of Myanmar (48). Among the prescription drugs, cough syrup containing codeine was the most common drug experimented followed by diazepam (1.1%). Among the illicit drug, marijuana was the most common drug experimented by the students (1.8%) followed by opium (1.4%), ATS (1.3%) and heroin (1%).

High description of diazepam use might be due to occasional use of drug in curiosity, peer pressure, pleasure. Furthermore, diazepam might not be known to be illegal and addictable in comparing with knowing of illegal drugs such as heroin,

opiate and amphetamine. Low proportion of amphetamine and heroin use might be due to lack of availability of these drugs in their environment or because of their adequate knowledge on hazards of use of these drugs. So, effective health education and information for promotion of knowledge on hazards of using these two drugs should be extended for the university students.

Presenting age at the time of study and substance use

It was found that relatively higher proportion of university students within the age range of 20-24 years were engaged in substance use (40.80%) than with the age of less than 20 years (38.82%), This can be explained that the older university students always thought that they were adult and they could take responsible what they have done. Moreover, they had a tendency to escape from their parents control and they want to have their way of life.

Most experimentation and initial use (and also much discontinuation) of the majority of dependence-producing drugs takes place during adolescence. For some individuals, experimentation starts earlier, for others somewhat later. Personal motives for drug taking also seem to be associated with age. Curiosity, a need to be accepted and to demonstrate independence of action, as well as a desire for pleasurable of thrilling experiences are particularly characteristic of the young and appear to be strongly associated with much of their use of drugs. The use of dependence-producing drugs by adults is not often associated with curiosity: by the time they reach early mature years they have already tried most of those they are going to try. Rather, they are likely to be seeking a sense of ease, relaxation, pleasure and "belonging" in their non-dependent use of such drugs (62).

Sex distribution and substance use

In this study there was an association between sex and substance use (OR= 13.20, CI= 7.92-22.01). Most of the university students who used psychoactive substances were males (67.58%). Even though substance use was an unacceptable behavior for both males and females, the blemish was more towards females. This is because cultural and social restriction on use of these substances by females is highly

valued. This finding was in accordance with the established fact of dominant male alcoholic in Myanmar (49). This male preponderance finding was consistent and may be explained with the theory that was internationally accepted that male sex was more common in substance abuse (63).

In this study, male sex was 13.20 times more likely effected than female. It was the sex differences in addiction behavior. The social pressure was more probably involved in boys and young man in many societies (62). They might get more information on drug from peer. It may be considered that addiction behavior could be transferred in to high knowledge on drug among young male. Even in female abuse it was the fact that they were pushed by their boy friends user (65).

Educational status and substance use

The higher the educational level, the lower proportion of substance use was found in this study. This result was similar to a previous study conducted by Dr. Htwel L (49) and Patton D, et al. (57). Smoking rates increased as one gets older. Students in the more senior grades were more likely to have ever had a drink of alcohol. This occurs because they are older and more likely to have been exposed to opportunities to drink.

Marital status and substance use

Married university students were less likely to use psychoactive substances (28.57%) than singles (39.68%). Single university students were 1.64 times more likely to use substances than married. Probably the major contributing factor is that marriage ushers in a change in social and recreational activities. Married people might have fewer evenings out for fun and recreation, attend fewer parties and other social events, get together less often with friends, and do not go to bars, taverns, and nightclubs as much. Getting engaged to be married also tends to take people out of the singles scene, which helps reduce heavy drinking, although becoming engaged does not appear to have as strong an effect on social life (and on heavy drinking) as marriage does (66, 67).

This finding was inconsistent with the result of a previous study which was aimed to identify the prevalence of alcohol use and alcohol plus drug use conducted by Dr. Htwel Lu (49). In that study, compared with those who had never married, substance use behavior was more often reported by those who had ever married.

Monthly allowance

The university students who got higher monthly allowances had more chance of using psychoactive substances than their counterparts. It is clear that the university students who got more allowances could spend their money in a negative way by using addictive substances. This result was consistent with previous study of risk behaviors of Myanmar migrant workers towards substance abuse by Nang PEK (68) which showed that there was significant association between monthly received money and substance use behavior. The higher income groups were more likely to use substances compared to lower income groups. This might be due to that the migrant workers were more susceptible to substance abuse as they were stressed for being away from family and friends, language barriers, difficult physical labor.

Current parent's occupation and substance use

On account for occupations of parents, those whose fathers were unemployed 57.14% of the university students used psychoactive substances than those fathers were employed. For mothers' occupations, 36.87% of psychoactive substance users' mothers were housewives. However, both fathers' and mothers' occupations were not associated with substance use. It means that the current occupations of the parents had little impact on the substance use behavior.

Family Income (estimated)

The university students who came from higher income families were 2.27 times more likely to use substances compared to those from lower income families. This result was similar to previous studies of Geographical Variation in the Prevalence of Problematic Substance Use in Canada (69) and Aung KK (50). They might be due to the fact that the university students who came from higher income families can ask for more pocket money from their parents and are likely to be more exposed addictive

substances. This supports our result that the university students with higher monthly allowances were more likely to use psychoactive substances.

Guardianship and substance use

The university students who lived with their parents were less likely to use psychoactive substances than the university students who lived with others. 46.67% of substance users did not live with parents while 38.13% of substance users lived together with their parents.

This finding was consistent with the previous study of knowledge, attitude and practice towards narcotic drugs among 400 high school students by San SO (64). It was found that there was a significant association between guardianship and substance use behavior. This is because parents could act as role model for their children and guarded by parents might be strictly control for their offspring leading to refrain from risk behaviors.

Marital status of parents and substance use

In this study, the university students whose parents stayed together were more likely to use psychoactive substances than divorce, separated and widow/widower parents (41.07% vs 27.27%).

The result was in contrast with the previous studied of Wells and Rankin (70) conducted a meta-analysis of the impact of single-parent households; the prevalence of delinquency in broken homes is about 10 to 15% higher than in intact homes. The family environment is the source of attachment because parents act as controls and teach their children socially acceptable behavior. There was also a strongly negative relationship with parental attachment and delinquency. Broken family and parental separation may contribute to one of the etiological factors of drug abuse (71).

Living happily with family and substance use

With regard to living happily with family, the result in this study showed that the university students who were not happy living with their families were 4.47 times more likely to use substances. In particular, if adolescents have an unsatisfactory family life, they may run away from homes and use substances as a way to escape from their suffering (72). Satisfactory family relationships and climate, emotional support, and moderation in the use of alcohol are influences that appear to delay or diminish adolescent initiation into drug use.

Family history and substance use

The result in this study showed that there was a significant association between drinking habit among family members and substance use behavior (OR= 4.77, CI= 3.03-7.49). This indicated that the student's substance use could be influenced by family member's drinking behavior. This was similar to a previous study on the influences of family history of drinking problems on the respondent's drinking behavior. Results showed that family member with alcohol drinking problems were found to have drunk than family members without alcohol drinking problem (49).

There was a strong association between family history of drug use and university student's substance use (OR= 4.69, CI= 2.47-8.92). Family history of drug use is significantly higher in the university students who used substances (71.15%). This was similar to a previous related study on the family influence and substance use (49). Increased substance use among parents and siblings may imply not only a potential genetic contribution but also an environmental contribution to the problem, because parental substance use may create a relaxed environment for substance use by the children (73).

Family history of smoking is higher in substance used group (52.87%) versus the family history of smoking in the university students who had did not use substances (47.13%) This shows the high genetic predisposition in substance use.

Many previous studies have done on the association between family factors and risk behaviors towards substance use. Family factor is not only important in making a person to start using drugs but also plays an important role in preventing a person from substance use. Family background and parenting styles have been found to predict later adolescent drug misuse (74). Children who grow up in families with a history of alcohol or drug abuse are twice as likely to drink and nearly four times more likely to use illicit drugs as children from families without a history of drug or alcohol abuse.

Peer influence and substance use

The result in this study showed that there was a significant association between peer influence and substance use behavior (OR= 8.33, CI= 5.09-13.63). It indicated that the student's substance use behavior could be influenced by what they learned and/ or saw from their friends. It was similar to the study of substance and drug abuse: knowledge, attitude and perception of schooling adolescents in Bangladesh (73), it was mentioned that perceived cause of substance/drugs abuse was from peer pressure.

The result indicates that peer pressure played an important role to increase having risk behavior on substance use. Peer pressure is an especially potent means of influencing the use of drugs and alcohol. The university students spent a large part of their days in the university; they might have chances to experiment risk behaviors by peer pressure. It could concluded that peer network, and school and family environment are important determinant of university students' behavior related to drugs use, smoking and drinking alcohol and demand the attention of preventive programmes for preventive health education and behaviors modification intervention (64).

Levels of knowledge and substance use

In this study, harmful effects of substance use were asked and found that majority of university students were quite knowledgeable. When they had sufficient knowledge on harmful effects of drug abuse that they would be more awareness and they would reframe from these risk behaviors. Awareness is not only crucial for the

university students themselves, also aiming for parents and siblings of the university students and community, because risk perception is based on the awareness of harmful effects of risk behaviors.

Regarding the knowledge on drug use and HIV, drug use and overdose, drug use and hepatitis, most of the university students gave correct answer. These showed that the university students had good knowledge concerning drug use and HIV/AIDS, drug use and overdose, drug use and hepatitis because these are the common problems that they could learn from their environment.

However, for the questions that amphetamine made the users alert and active, nearly 40% of the university students gave correct answer. The effect of amphetamine related to sexual activity, only 10% of the university students gave correct answers. Another question about the route of administration of amphetamine, 25.79% of the answers were correct. This showed that the university students had less knowledge on amphetamine which is becoming a commonly abused substance in border area of Myanmar (48).

The result indicated that proportion of good level of knowledge about substance use was predominant in the university students who did not use psychoactive substances. The trend here indicated that a higher level of knowledge about substance use increases the chance of university students not to drink alcohol and/or use psychoactive drugs. It was consistent with a study of San SO (64) which showed respondents who used to practice high risk behaviors received a lower score for their knowledge.

Levels of perception and substance use

The overall perception levels of the university students towards substance use was high (85.79%). Furthermore, 13.42% of the university students had moderate perception levels and less than 1% of the university students had low perception levels. For individual question on perception, 72.11% of the university students disagreed that alcohol drinking is a way to escape from problems and 85.79% knew that alcohol

drinking could easily loose control. Among 380 university students, 16.05% disagreed that they could become drug addict even if they used drug one time for fun or experiment. Surprisingly, 80% of the university students agreed that long term use of amphetamine could deteriorate the user's health. In the knowledge part, even though they did not have much knowledge about amphetamine, they might know that amphetamine was in a hard drugs group and could affect the health of the users.

The result in this study revealed that there was a significant association between levels of perception and substance use (OR= 2.85, CI= 1.86-4.37, p-value <0.001). It indicated that proportion of high levels of perception towards substance use was also predominant in university students who did not use substance. According to their perception of risk, risk-taking behaviors could be easily avoided and prevented among university students.

The result in this study was similar to the previous study about knowledge, attitude and practice towards narcotic drugs among 400 high school students conducted by San SO (64) in which poor attitude was found in respondents who practiced high risk behaviors.

Sexual experience of the university students

About 14.21% of the university students reported a history of sexual intercourse, representing a substantial portion of the overall sample (n=380). However, 85.79% of the university students had no sexual experience. Of the university students who had sexual experiences, nearly 16% of them did not have sex in the last 12 months. Among the university students who had engaged in sex in the last 12 months, 66.22% had risk behavior (unprotected sexual intercourse) and 37.78% of them used condoms consistently.

Frequency of condom use among the university students in sexual affairs was not very satisfactory. Only 37.78% of the university students who had had sex in the last 12 months used condoms regularly. The finding of the regular condom use in this study was lower than the previous study of risk behavior of HIV/AIDS among

factory workers (55). On studying the frequency of condom use in extramarital sexual affairs, 50% of the respondents always used condoms.

It was found that condom use depended on partner type. The university students who had engaged in sex with their husbands/wives or boyfriends/girlfriends in the last 12 months, 66.67% did not use condoms consistently. However, the university students who had sex with acquainted man/woman, about 20% of them had risk behavior (unprotected sex) while the university students who had sexual experience with commercial sex workers in the last 12 months, only 13.33% had risk behavior. The finding was better than the result from behavior surveillance survey in 1997 (15). The proportion of youth who reported using condoms consistently with CSW was 60%.

The university students who had had sex in the last 12 months, 38.89% admitted that they had engaged in sex after drinking alcohol, whiskey, wine or beer. Among them, more than one half of the university students used condoms consistently, indicating that the university students who had sexual intercourse under the influence of alcohol were more likely to use condoms than were others. Since drinking often takes place in settings where potential sexual partners are available, such situations may encourage individuals to be prepared to practice safe sex (54).

Similarly, 11.11% of the university students who had sexual activity in the last 12 months had engaged in sex after using psychoactive drugs. About 66.67% used condoms in every sexual intercourse. It might be that the university students in this study (18-24 years old) were sexually active, more likely to use alcohol and drugs and to use them in conjunction with sex, were more aware of the inhibiting effects of substance use, and are therefore more likely to protect themselves by using condoms (75).

Association between socio-demographic characteristic and risk behavior of HIV/AIDS

In this study, risk behavior of HIV/AIDS refers to unprotected sex. This means if the university students who had sexual intercourse in the last 12 months but did not use condoms consistently. The university students who had no sexual experiences were assumed no risk in this study.

Age and risk behavior of HIV/AIDS

Among the university students, 14.40% of the university students who were in the age of 20-24 years old had risk behavior regarding HIV/AIDS compared to 4.07% of the university students who were less than 20 years old. This might be due to the younger university students were not thinking about sexual intercourse with their partners, or might have more awareness regarding HIV/AIDS and used condoms consistently. This result was similar with other studies about risk behaviors on HIV/AIDS among high school students in Insein Township, Yangon, Myanmar conducted by Aung KK (50) and Kosay H (61). The higher aged group had more risky behaviors on HIV/AIDS than the younger aged group.

Sex and risk behavior of HIV/AIDS

Among the female university students, only 4.04% had risk behavior while 11.56% of male group had HIV/AIDS risk. It was found that a significant association between sex and risk behavior of HIV/AIDS (OR= 3.10, CI= 1.33-7.24). The risk behavior (unprotected sex) in this study was higher than the previous study on risk behaviors, attitudes and subjective norms among ninth standard students in 1997 (20). In that study, 5.3% of male students and 1.3% of female students had unprotected sexual exposure.

The result was not compatible with the previous study conducted in Madagascar (52). Female university students were as likely as male university students to say that they would not use condoms with a steady partner. Females were unwilling to use condoms with their steady boyfriends. This suggests that women engaged in

unprotected sexual intercourse in steady relationships, and in this way, they were exposed to STIs and HIV infection.

Religion and risk behavior of HIV/AIDS

Religion was not associated with risk behavior regarding HIV/AIDS (p-value 0.932). This result was supported by the study of sexual behavior and condom use among university students in Madagascar. It showed that the religion was not associated with condom use. This was because the difficulties of integrating sexual education in Christian teaching and the gap between Christian identity and individual behavior with regard to some of its doctrines. For example, condom use was recorded in spite of the Catholic position against condoms. Besides, none of the sexually active students had indicated religion as a reason for non condom use. Data also suggested that instead of religious affiliation or identity, faith-based religiosity could be a measure of interest in the study of relationships between religion and sexual behaviors in Madagascar (52).

Educational level and risk behavior of HIV/ AIDS

Concerning with the educational level of the university students, 8.75% of 4^{th} year university students had risk behavior compared to their counterparts. The higher the educational level the higher the risk behavior of HIV/AIDS (unprotected sex).

The result was inconsistent with the study of risk behavior of HIV/AIDS among Myanmar migrant sexually active women conducted by Khin PPN (53). The result showed that there was significant association between educational level and risk behaviors on HIV/AIDS and it showed that the lower educational level had the more risk of unprotected sex.

Marital Status and risk behavior of HIV/AIDS

The marital status also had a significant association with risk behavior of HIV/AIDS (OR= 18.89, CI= 4.00-89.28). About 57.14% of married group had risk behavior compared to those in single group (6.59%). The results might be due to that married university students have steady partners and usually do not use condoms except

for contraceptive reasons. The result was similar with the previous study done by Khin PPN (53); it revealed that married Myanmar sexually active women had unprotected sex than singles.

Monthly allowance and risk behavior of HIV/AIDS

In this study, it was found that the higher the monthly allowance got, the lower the risk behavior. However, there was no statistically significant association between monthly allowance and risk behavior of HIV/AIDS.

It was inconsistent with the previous study conducted by Aung KK (50). It showed that there was a positive association between monthly allowance and risk behavior regarding HIV/AIDS. This could be probably due to the fact that they have more chance to go to the interesting places and could contract the risk behavior on HIV/AIDS.

Knowledge and risk behavior of HIV/AIDS

In this study, 45.26% of the university students had high knowledge levels and only 12.37% had low knowledge levels. About half of university students (42.37%) had moderate knowledge levels.

The studied university students could be considered to be familiar with knowledge about condoms by evidence that 90% of them gave correct answers for a condom could prevent HIV/AIDS infection. Regarding their knowledge on mode of transmission of HIV, nearly 85% of the university students gave correct answers for questions about mosquito could not be a carrier of HIV/AIDS and 92.63% knew that eating food with HIV/AIDS patients could not get HIV/AIDS infection.

59.47% of the university students knew that sex without condom with a partner who could trust was a risk factor for HIV/AIDS. It is an interesting point for intervention because university students should have sound knowledge on transmission of HIV, which is preventable disease. Regarding the question about the possibility of presence of HIV infection in healthy looking person, 59.47% could give

the correct response. However, about one-fourth of the university students (24.21%) thought that it was impossible to have HIV infection in a healthy looking person.

Among the university students, 6.97% of low knowledge levels and 8.24% of high knowledge levels had risk behaviors regarding HIV/AIDS. The university students who had high knowledge were 1.20 times more likely to have unprotected sex than the university students who had low knowledge. The results show that although the university students had good knowledge on risk behavior of HIV/AIDS, their risk behaviors remained high. This study was supported by the study of Aung KK (50) and Khin PPN (53).

The researcher assumed that if university students had high knowledge, they would abstain from risk behavior of HIV/AIDS (unprotected sex) because it is a common belief that the mere presence of knowledge about what influences health is sufficient to motivate individuals towards healthier alternative. In that case, it could be concluded that knowledge may be sufficient to elicit changes in behavior, but in other cases it might be neither necessary nor sufficient. In addition, the transfer of knowledge into action is dependent on a wide range of internal and external factors, including values, attitudes and beliefs. For most individuals, the translation of knowledge into behavior requires the development of specific skills, which might include interpersonal skills. In this study, the risk behavior of university students also depended on other factors apart from the presence of knowledge.

Perception and risk behaviors of HIV/AIDS

In this study, majority of the university students (60%) had moderate perception levels and 39.74% had high perception levels regarding risk behavior of HIV/AIDS. 9.40% of the university students who had high perception levels and 6.31% of the university students who had low perception levels had risk behavior regarding HIV/AIDS (unprotected sex). Although the university students who had high perception towards risk of HIV/AIDS, their behaviors could still be risky.

The result of this study was supported by a case study of Nigerian youth conducted by Oshi et al. (76). High self-perception of risk did not lead to reduction of risky behavior through adoption of safer sex practices.

According to Health Belief Model, it is believed that individuals will take action to ward off, to screen for, or to control an ill-health condition if they regard themselves as susceptible to the condition. Nonetheless, research conducted among 2785 patients of community-based family practitioners (78). It found that smokers were more likely to perceive a heightened personal risk of heart attack, cancer and stroke than non-smokers However, a larger proportion of smokers compared to non-smokers tended to underestimate their actual risk of heart attack, cancer and stroke. This fact supports why the university students in this study were practicing the risk behaviors although they had high perception regarding risk of HIV/AIDS.

Association between substance use and risk behavior of HIV/AIDS

In this study, 16.20% of the university students who used psychoactive substances had risk behavior, but only 2.18% of the university students who did not use substances had risk behavior regarding HIV/AIDS.

When condom use was considered, only those who use substances (alcohol and/or psychoactive drug) reported less consistent use of condoms. This observation lends support to the suggestion that substance use may inhibit the practice of safe sex. There was a significant association between substance use and risk behavior of HIV/AIDS (unprotected sex). This is because of the nature of substance in decreasing inhibitions, altering rational decision making and increasing risk-taking behaviors. On the other hand, substance use was related to non condom use among adolescent (59).

However, our results do not demonstrate whether substance use has a direct causal effect on the practice of using condoms. For example, the university students who were psychoactive substance users may be more likely to have high-risk sex (use condoms inconsistently). However, we could not establish whether substance use and condom use took place on the same occasion – that is, we cannot know from the data

whether the times when the university students used substance and had sex were the same times when that engaged in protected sexual behavior.

Factors that influenced to the university students' substance use and risk behavior of HIV/AIDS

Multiple logistic regression models were developed to find factors that influenced to the university students' substance use and risk behavior regarding HIV/AIDS. All variables (socio-demographic, social factors, knowledge and perception towards substance use) were selected for the multiple logistic regression model of substance use. For risk behavior regarding HIV/AIDS, socio-demographic characteristics, knowledge and perceptions towards HIV/AIDS and substance use were included in the multiple logistic regression model.

The results showed that male, drinking alcohol in family members, psychoactive drug use in family members, drinking alcohol in friends and asked to drink alcohol together with friends remained in the final multiple logistic regression model for substance use. This means that these five variables influenced to university students' substance use. In this study, the association between these five variables and university students' substance use were significant when other factors were adjusted for in a logistic model.

In this study, the association between male sex and substance use was significant after adjusting other factors. This result was supported by a population-base study on alcohol and high-risk sexual behaviors in Botswana (79). Males had nearly three times the odds of heavy drinking when compared to females. Similar in rural southwest Uganda (80), a study conducted among sexually active adults showed that males were more likely than women to have ever drunk alcohol. Males are more likely to use marijuana than females (81).

Family influence (drinking alcohol and drug use in family members) and peer influence (drinking alcohol in friends and asked to drink alcohol together by friends) were strongly associated with university students' substance use. Family and

peer relationships are important for adolescent alcohol and drug use because both are primary groups where attitudes and behaviors are learned. These results were supported by a study of parental and peer influences on the risk of adolescent drug use (81). Parental attitudes and sibling use of substances were important risk factors for adolescent's substance use. For each unit increase in parental tolerance of alcohol use, the frequency of adolescent alcohol use increased by 80 percent. Having a sibling who had used marijuana, associated with 50% increased in marijuana use. For the peer influence, the number of close friends who drink increased, the risk of binge drinking almost doubled.

These findings were consistent with a previous research (82) showing that, imitation of peer behavior had direct effects on drinking and smoking of adolescent in Korea. Fathers' use of substances and parents' reaction have significant effects on their adolescents' use of all of the substances; for alcohol and tobacco use, imitation of parents has the strongest effects. A similar finding was reported in a previously conducted study among adolescent in Thailand 2008 (83), revealed that parental drinking were associated with adolescent drinking behavior.

For risk behavior regarding HIV/AIDS, age, alcohol or psychoactive drug use and both alcohol and drug use were strongly associated with risk behavior regarding HIV/AIDS after adjusting with other variables.

The result was supported by a study of the relationship of substance use to sexual activity among young adults in the United States (54). Condoms use was significantly related to being younger age, which indicated a greater acceptance of condoms among younger age-groups.

Substance use was strongly associated with risk behavior regarding HIV/AIDS in this study. This result reinforced the findings from a study that alcohol use was strongly associated with a number of risky sexual behaviors in sub-Saharan Africa. In a study among 324 male beer-hall patrons in Zimbabwe (84) demonstrated that the number of days of alcohol consumption was correlated with the number of

episodes of unprotected sex. Another study conducted in Botswana (79), showed that relationships between alcohol use and risky sexual practices were similar in both men and women, and that there is a dose-response relationship between alcohol use and unprotected sex as well as other risky sexual practices among both genders. Similarly, a study of khat and alcohol use and risky sex behavior among in-school and out-of school youth in Ethiopia (56), revealed that there was a linear and strong association between unprotected sex and substance use.

CHAPTER VI
CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The present study was undertaken to describe the magnitude of risky sexual behavior of HIV/AIDS and its association with substance use among university students in Yangon, Myanmar.

Human immunodeficiency virus (HIV), the cause of acquired immunodeficiency syndrome (AIDS), is most commonly spread through unprotected sex with an infected partner. HIV enters the body through the lining of the sex organs, and destroys immune system cells, leaving the infected person susceptible to other viruses and bacteria. Although HIV education and prevention campaigns emphasize the importance of safe sex in reducing HIV transmission, people continue to become infected by having unprotected sex (that is, not using a condom) with either a non-monogamous partner or multiple sexual partners. Research in this study found that substance use is associated with risky sexual behaviors. This is because alcohol relaxes the brain and body, reduces inhibitions, and diminishes risk perception. Drinking alcohol and misuse of psychoactive drugs may further increase the risk of becoming infected with HIV through its suppressive effects on the immune system.

Substance use and abuse are important public health problems in Myanmar and throughout the world. In many developed countries, the initial stages of substance use typically include experimentation with alcohol, tobacco, or marijuana with one's peer group during adolescence. From a developmental perspective, data shows that rates of alcohol, tobacco, marijuana, and other illicit drug use typically escalate during adolescence and peak during young adulthood, corresponding with the increased

freedom and independence of this time of life. Substance use decreases for most young people as they take on adult responsibilities, although a proportion will continue or increase their use and develop substance use problems. Given what we know about the onset and progression of substance use, implementing preventive interventions during early adolescence is critical.

This study was part of an evaluation of an HIV prevention program for the adolescent population. Future research efforts must target population's youth who drink alcohol to better understand the extent and contexts of drinking behaviors, and psychosocial predictors of engagement in drinking and concomitant risk behaviors. There have been limited informed educational efforts in Myanmar with regard to alcohol consumption. Educational programs must include a realistic context in which to present alcohol-drinking behaviors and they must address the multiple health risk behavior that accompanies alcohol consumption. These efforts should include prevention and harm-reduction programs, and differentially target drinkers and non-drinkers, children, adolescents, and adults and men and women.

Substance use is associated with sexual risk behavior of HIV/AIDS among youth in Yangon, Myanmar. The finding of this study underscores the need to integrate substance use and HIV prevention program. Our findings support for the need to target substance use and abuse in HIV prevention programs.

Moreover, these findings provide important preliminary data regarding adolescents, alcohol consumption and psychoactive drug use and risk behaviors of HIV/AIDS in Myanmar. Only with sufficient background knowledge, and informed and targeted education programs can the harmful effects associated with substance use and abuse be abated.

In summary, alcohol and/or psychoactive drug use are independently associated with high risk sexual behavior for HIV infection, which may be due to the direct effect of these substances on sexual behavior, or to specific characteristics of the life-styles which give rise to these types of consumption.

6.2 Recommendations

6.2.1 University

Schools and universities are basic institutions for all societies and places for imitation from peers and socialization process takes places. Moreover, much behavior can be cultivated in those atmospheres. Therefore, stakeholders and community are to be collaborated for creating a supportive environment to cultivate healthy behaviors.

Peer pressure plays a curial role in adopting health risk behaviors. Therefore, peer group education among university students should be strengthened especially to prevent risk behaviors.

Most drug prevention or education programmes take place in school settings. A variety of theory-based school-based drug prevention programmes have been developed and tested. The most effective programmes are delivered interactively and teach skills to help young people refuse drug offers, resist pro-drug influences, correct misperceptions that drug use is normative, and enhance social and personal competence skills. A key challenge is to identify mechanisms for the wide dissemination of evidence-based drug preventive interventions and ways to train providers to implement programmes effectively and thoroughly.

6.2.2 Government

HIV prevention programmes targeted at population groups in which there is frequent consumption of alcohol use should consider specific strategies to help these persons resist abandoning safe sexual behavior and to reinforce the use of condoms when they are under the influence of such substances.

6.2.3 Recommendation for further study

In this study, general drinking habits are simply correlated with general measures of risky sexual behavior. The association between substance use and sexual risk behaviors has been established at the level of individuals, not of events. The

interplay between substance use and sexual risk behavior is part of a context that incorporates elements of personality, situation and relationships. Therefore, the researcher would like to recommend a more targeted approach is an event-level method, in which respondents are asked about drinking and unprotected sex in a specific sexual encounter.

The study population in this study is university students. Similar studies should be conducted for out-of-school youth to compare the result of the association between substance use and risk behavior of HIV/AIDS.

This study was designed as an evaluation of an HIV prevention program for the youth population. Future research efforts must target populations of youth who drink alcohol to better understand the extent and contexts of drinking behaviors, and psychosocial predictors of engagement in drinking and concomitant risk behaviors.

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APPENDIX

APPENDIX A
QUESTIONNAIRES

The relationship of substance use to risk behavior of HIV/AIDS among youth, in Yangon, Myanmar

Part 1: Socio-demographic characteristics

Instruction: Please mark (√) in and ☐ fill appropriately.

1. Age (in completed year) _____

2. Sex ☐1. Male ☐2. Female

3. Religion ☐1. Buddhist ☐2. Christian ☐3. Islam
☐4. Hindu ☐ 5. others (specify) _____

4. Race _____

5. Educational Level ☐1. 1st Year University ☐2. 2nd Year University
☐3. 3rd Year University ☐4. 4th Year University

6. Marital Status ☐1. Never married ☐2. Married ☐3. Separated
☐4. Divorced ☐5.Widower

7. How much is your monthly allowance or pocket money? _____ kyats

Part 2: Social factor

Instruction: Please mark (√) in and ☐ fill appropriately.

1. Father's occupation ☐1.Government service ☐2.Hawker
☐3. Self-employed ☐4. Unemployed
☐5. Others (specify) _____

2. Mother's occupation ☐1.Government service ☐2.Hawker
☐3. Self-employed ☐4. Housewife
☐5. Others (specify) _____

3. Family income (estimated in Kyats/ month) _____

4. Marital status of parents ☐1. Stay together ☐2. Divorced
☐3. Widower ☐4. Widow
☐5. Separate ☐6. Others (specify) _____

5. With whom do you live?
☐1. Parents ☐2. Relative (Aunt, Uncle, Cousins)
☐3. Friend's house ☐4. Others (Specify) _____

6. Do your parents or brothers/ sisters drink alcohol, whisky, beer or wine?
☐ 1. Always ☐ 2. Sometimes ☐ 3. Never

7. Do your parents or brothers/ sisters use the following psychoactive drugs?

(a) Heroin	☐1. Always	☐2. Sometimes	☐ 3. Never
(b) Diazepam (for relaxing)	☐1. Always	☐2. Sometimes	☐ 3. Never
(c) Amphetamine Type Stimulant	☐1. Always	☐2. Sometimes	☐ 3. Never
(d) Opium	☐1. Always	☐2. Sometimes	☐ 3. Never
(e) Glue sniffing	☐1. Always	☐2. Sometimes	☐ 3. Never
(f) Marijuana	☐1. Always	☐2. Sometimes	☐ 3. Never
(g) Cough syrup (for relaxing)	☐1. Always	☐2. Sometimes	☐ 3. Never
(h) Smoking	☐1. Always	☐2. Sometimes	☐ 3. Never

8. Have you ever had a discussion with your parents/ brothers/ sisters about the risk of using Heroin, Diazepam, Amphetamine Type Stimulant, Opium, Glue sniffing, Marijuana, Cough syrup (for relaxing), smoking?

☐1. Always ☐2. Sometimes ☐ 3. Never

9. Are you happy living with your family?

☐1. Yes ☐2. No

If yes, ☐ 1. a lot ☐ 2. moderate ☐ 3. a little

Peer Influence

10. Do you have closed friends who use the following substance?

(a) Alcohol ☐1. Always ☐2. Sometimes ☐ 3. Never

(b) Heroin ☐1. Always ☐2. Sometimes ☐ 3. Never

(c) Diazepam (for relaxing) ☐1. Always ☐2. Sometimes ☐ 3. Never

(d) Amphetamine Type Stimulant ☐1. Always ☐2. Sometimes ☐ 3. Never

(e) Opium ☐1. Always ☐2. Sometimes ☐ 3. Never

(f) Glue sniffing ☐1. Always ☐2. Sometimes ☐ 3. Never

(g) Marijuana ☐1. Always ☐2. Sometimes ☐ 3. Never

(h) Cough syrup (for relaxing) ☐1. Always ☐2. Sometimes ☐ 3. Never

(i) Smoking ☐1. Always ☐2. Sometimes ☐ 3. Never

11. Whom do you think have the biggest influence in your drinking or not drinking?

☐1. Friends ☐2. People in your community

☐3. Parents who drink ☐4. Others (specify) _____

12. Do you spend your leisure time with your friends?

☐1. Always ☐2. Sometimes ☐ 3. Never

13. Have you ever asked to drink alcohol together with your friends?

☐1. Always ☐2. Sometimes ☐ 3. Never

14. With whom you had tried smoking, drinking alcohol or using drugs for the first time.
(Skip this question if the respondent has never used any kind of substance before)

☐1. Friends ☐2. Partner (boy/ girlfriend/ spouse)

☐3. Family members ☐4. Others (specify) _____

15. Do you get more respect or reward from your friends or colleagues, if you smoke, drink alcohol or use drug with them?
(Skip this question if the respondent has never used any kind of substance before)

☐1. Yes ☐2. No

16. Have you ever received a punishment from your friends or colleagues, if you don't want to smoke, drink alcohol or use drug with them?

☐1. Yes ☐2. No

Part 3: Psycho-social factors

Instruction: Please mark (√) in and ☐ fill appropriately.

Knowledge towards substance use which affects on risk behavior of HIV/ AIDS

No	Statements	Yes	No	Don't know
1	Amphetamine (Yaba) use makes the user alert and active			
2	A person who uses amphetamine (Yaba) will be able to enjoy sexual activity more than usual			
3	Diazepam can cause sleepiness and drowsiness			
4	If a drug user stops using drugs, he/ she may suffer from withdrawal symptoms			
5	Overdose is the common cause of death among drug users			
6	Amphetamine (Yaba) can be used by inhalation as well as injection.			
7	Heroin is used by injecting into the veins.			
8	Hepatitis B and C can be caused by sharing infected needles and syringes among intravenous drug users.			
9	HIV/ AIDS is the most threatening infection among intravenous drug users			
10	HIV can be transmitted from intravenous drug users to their sexual partners.			

Perception towards substance use which affects on risk behavior of HIV/ AIDS
(SA= Strongly Agree, A= Agree, NS= Not Sure, DA= Disagree, SD= Strongly Disagree)

No	Statement	SA	A	NS	DA	SD
11	Alcohol drinking is a way to escape from problems					
12	Alcohol drinking can easily loose control					
13	I can become drug addict even if I use one time for fun or experiment.					
14	Long term use of amphetamine (Yaba) can deteriorate the user's health.					
15	Substance abuse can lead to serious health problems.					
16	If I use drug, I can create problems to the community such as violence and crimes.					
17	If I become a drug addict, I will be discriminated by my friends.					
18	If I do not smoke, I can prevent myself from substance abuse.					
19	If I do not drink or smoke, I can be able to save more money					
20	If a drug addicts stops using drugs, he can become a good person to the family and the society.					
21	If I stop smoking, drinking alcohol or using any kind of substance, my life will be very boring.					
22	I cannot say "no" to my friend who offers me alcohol or drugs.					
23	If the community neglects and discriminates a drug addict, it will be more difficult for him to stop using drugs.					

Part 4: Knowledge regarding HIV/ AIDS

Instruction: Please mark (√) in and □ fill appropriately.

1. Do you think a condom can prevent HIV/ AIDS infection?

□1. Yes □2. No □3. Don't Know

2. Do you think that those who have only one partner without HIV/ AIDS, they can prevent from HIV/ AIDS?

□1. Yes □2. No □3. Don't Know

3. Do you think that the person, who looks healthy, can get HIV/ AIDS?

☐1. Yes ☐2. No ☐3. Don't Know

4. Do you think that mosquito can be a carrier of HIV/ AIDS to the people?

☐1. Yes ☐2. No ☐3. Don't Know

5. Do you think that eating food with HIV/ AIDS patient can get HIV/ AIDS?

☐1. Yes ☐2. No ☐3. Don't Know

6. Do you think that having sex without using condom with the partner who can trust may be can get HIV/ AIDS?

☐1. Yes ☐2. No ☐3. Don't Know

7. Do you currently have some kind of medicine (anti-retrovirus) to stop HIV/ AIDS?

☐1. Yes ☐2. No ☐3. Don't Know

Perception towards HIV/ AIDS

(SA= Strongly Agree, A= Agree, NS= Not Sure, DA= Disagree, SD= Strongly Disagree)

No	Statement	SA	A	NS	DA	SD
8	Every person has equal chance to get HIV/ AIDS					
9	It is easy to use condom					
10	Use of condom can protect from HIV/ AIDS					
11	There is no need to use condoms with a steady partner					
12	It is easy to talk about condom use with a partner					
13	It is embarrassing to buy condoms					
14	Having sex with multiple partners increase the chance of getting HIV					
15	Having sex with Commercial Sex Worker without using condom get the chance of HIV					
16	Use of condom makes sex less enjoyable					

Part 5: Substance Use

Please mark (√) in and ☐ fill appropriately.

1. Have you ever drunk alcohol within 3 months? (This includes drinking beer, whisky, and wine)

☐ 1. every day ☐ 2. 2-3 times per week ☐ 3. Once a week

☐ 4. Occasional ☐ 5. Very rarely ☐ 6. Never

2. How much alcohol can you drink in a day? _____

3. When you drink alcohol, do you drink even get drunk?

☐1. Always ☐2. Sometimes ☐ 3. Never

4. At what age did you start drinking liquors? _____Years old

5. What is the main reason for drinking alcohol?

☐ 1. My friends make me drink ☐ 2. I see my parents drinking

☐ 3. Drinking makes me feel I'm matured enough ☐ 4. Relieves stress at school/ home

☐ 5. Drinking is now my addicted habit ☐ 6. Others (specify) _____

6. You consider yourself as a

☐ 1. Heavy drinker ☐ 2. Mild drinkers ☐ 3. moderate drinker

7. Drinking alcohol makes you

☐ 1. Feel good about yourself ☐ 2 .Lose your self-control

☐ 3. Express your feelings ☐ 4. Become accepted in your peer group

8. Have you ever smoked cigarettes, cigars, cheroots within 3 months?

☐1. Always ☐2. Sometimes ☐ 3. Never

9. Have you ever taken sleeping pills (e.g. diazepam) without a doctor's prescription in your life?

☐1. Always ☐2. Sometimes ☐ 3. Never

10. Have you ever used marijuana in your life?

☐1. Always ☐2. Sometimes ☐ 3. Never

11. Have you ever used amphetamine (Yaba) in your life?

☐1. Always ☐2. Sometimes ☐ 3. Never

12. Have you ever used drugs such as heroin, cocaine or opium in your life?

☐1. Always ☐2. Sometimes ☐ 3. Never

13. During your life, have you ever tried to inject any illegal drug into your body?

☐1. Always ☐2. Sometimes ☐ 3. Never

14. When you feel stress or tension, do you use any type of substance for relaxing?

☐1. Always ☐2. Sometimes ☐ 3. Never

Part 6: Risk Behavior of HIV/ AIDS

Instruction: Please mark (√) in and ☐ fill appropriately.

1. Have you ever had sexual intercourse?

☐ 1. Yes ☐ 2. No

(**If No, skip all the following questions**)

2. How many sexual partners do you have?

☐ 1. one ☐ 2. two ☐ 3. More than two

3. First sex intercourse, have you willing to had sexual intercourse or force?

☐ 1. Be willing ☐ 2. Force

4. Who did you have sexual intercourse with for the first time? (Select only one)

☐ 1. Boyfriend/ girlfriend or lover

☐ 2. Commercial sex worker

☐ 3. Others (specify) _____

5. You had sexual intercourse for the first time when you were ..... years.

6. Did you use a condom when you had sexual intercourse for the first time?

☐ 1. Used ☐ 2. Didn't use

Sexual intercourse within the last year to the present

7. Within the last one year until today, have you had sexual intercourse?

☐ 1. No ☐ 2. Yes

If yes, how often have you used condom?

☐ 1. Every time ☐ 2. Sometimes ☐ 3. Never use it

8. Within the last year have you had sexual intercourse with your husband/ wife or boyfriend/ girlfriend?

☐ 1. No ☐ 2. Yes

If yes, how often have you used condom?

☐ 1. Every time ☐ 2. Sometimes ☐ 3. Never use it

9. Within the last year have you had sexual intercourse with the acquainted man/ woman (not boyfriend/ girlfriend or lover)?

☐ 1. No ☐ 2. Yes

If yes, how often have you used condom?

☐ 1. Every time ☐ 2. Sometimes ☐ 3. Never use it

10. Within the last year have you had sexual intercourse with commercial sex worker?

☐ 1. No ☐ 2. Yes

If yes, how often have you used condom?

☐ 1. Every time ☐ 2. Sometimes ☐ 3. Never use it

11. Whom have you had the last sexual intercourse with?

☐ 1. Boyfriend/ girlfriend or lover

☐ 2. Commercial sex worker

☐ 3. Others (specify) _____

12. Did you use condom when you last had sexual intercourse?

☐ 1. Used ☐ 2. Didn't use because .....

13. If you need to use condom, did you convenient to buy it?

☐ 1. Yes ☐ 2. No ☐ 3. Never use it

14. Within the last year have you had sexual intercourse after drinking alcohol, whisky, wine or beer?

☐ 1. No ☐ 2. Yes

If yes, did you use condom?

☐ 1. Every time ☐ 2. Sometimes ☐ 3. Never use it

15. Within the last year, have you used marijuana or yielding leaf, methamphetamine, heroin, cocaine, ecstasy drug, inhaled/ sniffed glue or thinner?

☐ 1. Everyday ☐ 2. Occasional ☐ 3. Just try ☐ 4. Never use it

16. Within the last year, have you had sexual intercourse after using substance (marijuana or yielding leaf, amphetamine type stimulant, heroin, cocaine, ecstasy drug, inhaled/ sniffed glue or thinner)?

☐ 1. No ☐ 2. Yes

If yes, did you use condom?

☐ 1. Every time ☐ 2. Sometimes ☐ 3. Never use it

Thank you for your time for giving us all useful information

BIOGRAPHY

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