

# High Risk Behavior, Knowledge and Attitude of HIV/AIDS among Workers in Factories Manufacturing Alcohol in Mandalay, Myanmar

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Received February 18<sup>th</sup>, 2013; revised March 20<sup>th</sup>, 2013; accepted March 28<sup>th</sup>, 2013

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## ABSTRACT

Analytical cross-sectional study was conducted in Mandalay, Myanmar to identify high risk sexual behavior, knowledge and attitude regarding HIV/AIDS and prevention practice related to HIV/AIDS among male workers in factories manufacturing alcohol. Participants included male workers (n = 219) from 10 alcohol factories in Industrial Zone (A). Data were collected through face to face interviews using pretested structured questionnaire. Results showed that 38.8% of the respondents were able to get discount to buy alcohol from their factory, and 70.3% of them consumed alcohol in the last 12 months. Regarding high risk sexual behavior, 38.4% of the respondents had intercourse with a casual partner of opposite gender, while 31.5% had intercourse with commercial sex workers and 19.2% had homosexual relationship during last 12 months. Among the married, 45% had extramarital intercourse. More than 80% of the respondents received HIV/AIDS related information from media and colleagues while 51.1% of them received from NGOs or health education at workplace. Among the respondents who engaged in different high risk sexual behaviors, 50% - 88.9% did not use condom consistently and they had significantly lower knowledge about HIV/AIDS. However, the knowledge and attitude regarding HIV/AIDS were not significantly different between the respondents who used condom consistently and those who did not. This study highlights the need of health education about HIV/AIDS and access to affordable condoms among workers in factories manufacturing alcohol to improve their knowledge, attitude and behavior, as well as to promote consistent condom usage as it is vital for prevention and control of HIV/AIDS.

**Keywords:** HIV/AIDS; Workers; Mandalay; Myanmar

## 1. Introduction

HIV/AIDS has remained a threat to human society for over three decades [1] since its discovery in early 1981 [2]. Global summary of HIV epidemics at the end of year 2010 estimated 34 (31.6 - 35.2) million people living with HIV and 1.8 (1.6 - 1.9) million people died due to AIDS [3]. In South East Asia, Myanmar is one of the most serious HIV/AIDS epidemic regions as HIV/AIDS is now ranked as first in nation's top three priority diseases [4]. In 2011, the national prevalence of HIV infection in adult population aged 15 - 49 was 0.6% and an estimated 16,000 people died of AIDS related illness [5].

HIV infection rate is highest in the working age group and it primarily kills the young and middle aged adults during their peak productive years [6]. Workplace is an important part of the life in this age group as they spend most of their time at workplace. In recent years, HIV/AIDS is also believed to be workplace phenomenon because it has the potential to affect labor and productivity, and also the workplace can play a vital role in the wider struggles to limit the spread of epidemic. Some of the work related factors such as mobility of workers and separation away from families can increase the risk of HIV infection [7].

Myanmar is a conservative country with strong cultural norms regarding sexual behavior. As a result, research to identify priorities has many challenges. Knowledge and

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prevention of HIV/AIDS has been identified in sex workers, adolescent and young adult population and drug users [8,9]. Though knowledge, attitude and beliefs of sexual behavior regarding HIV/AIDS are important part of HIV/AIDS prevention [10], these have not been examined among workers in factories manufacturing alcohol. Therefore, we conducted a cross-sectional study to identify the high risk sexual behavior, knowledge and attitude about HIV/AIDS and prevention practice related to HIV/AIDS among male workers in factories manufacturing alcohol in Mandalay, Myanmar.

## 2. Methods

### 2.1. Study Design and Setting

Analytical cross-sectional study was conducted in Mandalay, Myanmar from January to April 2012. Mandalay is the second largest city of Myanmar having an estimated population of 1 million [11]. The industrial zone in Mandalay is divided into two parts: Industrial Zone (A) and Industrial Zone (B).

### 2.2. Sample Size and Sampling

Industrial Zone (A) was purposively selected as most of the alcohol factories are located. In this zone, there were about 486 male workers from 10 alcohol factories. The required sample size was calculated using Yamane formula [12] and was found to be 219. Proportional sampling method was used and the sample from each subgroup was collected in proportion to actual size of the group in the total population. After getting permission from factory owners/managers, the participants were selected by using simple random sampling. The male workers who were aged between 18 to 49 years and willing to participate were included.

### 2.3. Data Collection

Data were collected through face to face interviews using structured questionnaire. The questionnaire consisted of five parts including socio-demographic and occupational characteristics, knowledge and attitude about HIV/AIDS, sexual behavior and preventive practice such as consistent condom use. The questionnaire was prepared in English language and then translated into Burmese language. Pre-test was done with 30 male workers in alcohol factories from Industrial Zone (A), and the validity and reliability of the questionnaire were checked. The content validity was checked by three experts. Cronbach's alpha coefficient for knowledge questions was 0.84 and attitude questions was 0.72. Interviews were conducted at workplace by the researcher and trained health volunteers from local non-government organization.

### 2.4. Statistical Analysis

Data were analyzed using SPSS 12.0 version. Regarding knowledge and attitude, scores were computed by taking the sum. Descriptive statistic such as frequency, percentage, mean, standard deviation and bar chart were described wherever appropriate. Independent sample T test was used to identify the relationship between knowledge, attitude and high risk sexual behavior and consistent condom use. All tests were two-sided and the level of significance was set at 0.05.

### 2.5. Ethical Consideration

Before the interview, the purpose and procedure of the study were explained to the respondents. Participation was voluntary and informed consent was obtained from each respondent. Confidentiality was maintained and anonymity of responses was ensured. In addition, the interview was held in private place that was away from managers/owners. Data were kept secured and made available only to the data analyst. All the study procedures were approved by Ethical Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University, Bangkok, Thailand.

## 3. Results

### 3.1. Description of Study Population

A total of 219 male alcohol factory workers aged between 19 to 49 years participated in this study. Among the respondents, 47.9% were aged 21 - 30 years while 10% were younger than 20 years. Single respondents comprised more than half (53.4%) of the population. Regarding education, 78.5% of them completed at least high school education and 56.6% of them were from the study area, Mandalay. 76.7% of the respondents were living with their family and relatives, while 8.25 and 15.1% were staying alone or with their friends respectively. 31.1% of the respondents mentioned that they usually travelled out of town for job. Total monthly income ranged from 25 to 350 USD and 74% of the respondents had monthly income less than 100 USD (data not shown). 38.8% of them mentioned that they were able to get discount to buy alcohol from their factory (**Table 1**).

### 3.2. Sources of HIV/AIDS Related Information

All the study participants were asked about HIV/AIDS, its transmission and prevention. More than 80% of the respondents received HIV/AIDS related information from media such as television, poster, newspaper and magazine. Similarly, 86.8% mentioned that they also received that information from friends and colleagues.

However, 51.1% of them received HIV/AIDS related health education from non-government organizations (NGOs) while 58.4% received health education at the workplace (Table 2). Among the respondents, 86.8% could mention the places from where they could get condom (data not shown).

**Table 1. Socio-demographic and occupational characteristics of respondents (n = 219).**

Variables	Frequency (%)
<b>Age</b>	
19 - 20	22 (10.0)
21 - 30	105 (47.9)
31 - 40	68 (31.2)
>40	24 (10.9)
Mean ± SD= 29.7 ± 7.5, range = 19 - 49	
<b>Marital status</b>	
Single	117 (53.4)
Married	100 (45.6)
Divorced & widowed	2 (1.0)
<b>Education</b>	
Primary education	5 (2.3)
Secondary education	42 (19.2)
High school & above	172 (78.5)
<b>Hometown</b>	
Mandalay division	124 (56.6)
Other states & divisions	95 (43.4)
<b>Living with</b>	
Alone	18 (8.2)
Friends	33 (15.1)
Family/relatives	168 (76.7)
<b>Need to travel for job</b>	
Yes	68 (31.1)
No	151 (68.9)
<b>Eligible to buy alcohol with discount</b>	
Yes	85 (38.8)
No	134 (61.2)

**Table 2. Sources of HIV/AIDS related information (n = 219).**

Variables	Frequency (%)
<b>Sources of information*</b>	
Television	204 (93.2)
Poster	199 (90.9)
Newspaper	197 (90.0)
Magazine	196 (89.5)
Friends/colleagues	190 (86.8)
Family members	163 (74.4)
Workplace	128 (58.4)
NGOs	112 (51.1)
<b>Sources of information at workplace (n = 128)*</b>	
Colleagues	98 (76.6)
Supervisor	24 (18.8)
Manager	12 (9.4)
Owner	9 (7.0)

\*Multiple response answer.

### 3.3. Sexual Behavior and Consistent Condom Use

70.3% of the respondents consumed alcohol when 3.7% used illegal drugs in the last 12 months. While 54.5% of the respondents who consumed alcohol had intercourse after drinking, and 75% of the respondents who consumed illegal drug had intercourse after taking drug (Table 3).

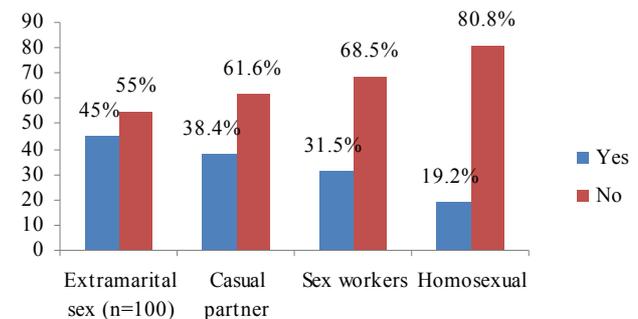
Regarding high risk sexual behavior in the last 12 months, 38.4% of the respondents had intercourse with casual partner while 31.5% had intercourse with commercial sex workers and 19.2% had homosexual relationship. Among the married person, 45% had extramarital intercourse (Figure 1). The usage of condom among the respondents who engaged high risk sexual behavior is shown in Figure 2.

### 3.4. Relationship between Knowledge, Attitude, High Risk Sexual Behavior and Consistent Condom Use

Relationship between knowledge and attitude about HIV/AIDS and high risk sexual behavior and consistent condom use is shown in Table 4. There was significant association of knowledge about HIV/AIDS and high risk

**Table 3. Personal behavior and high risk sexual behavior (n = 219).**

Variables	Frequency (%)
<b>Drink alcohol in last 12 months</b>	
Yes	154 (70.3)
No	65 (29.7)
<b>Intercourse after alcohol drinking (n = 154)</b>	
Yes	84 (54.5)
No	70 (45.5)
<b>Use illegal drugs in last 12 months</b>	
Yes	8 (3.7)
No	211 (96.3)
<b>Intercourse after use of illegal drugs (n = 8)</b>	
Yes	6 (75.0)
No	2 (25.0)



**Figure 1. High risk sexual behavior among respondents in last 12 months (n = 219).**

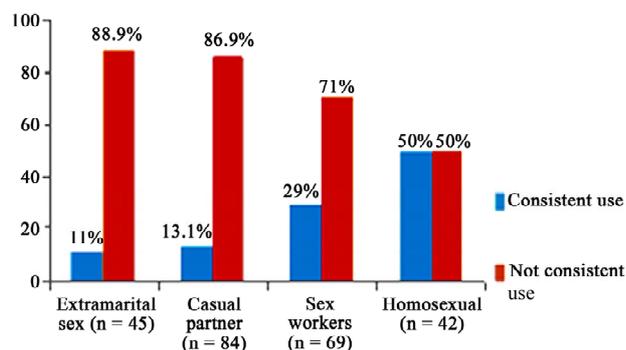


Figure 2. Consistent condom use among respondents who engaged high risk sexual behavior in last 12 months.

sexual behavior. The respondents who engaged in high risk sexual behavior such as extramarital intercourse, intercourse with casual partner and commercial sex workers, and homosexual had significantly lower knowledge about HIV/AIDS. However, there was no significant difference of attitude between them (Table 5).

Table 4 reveals the relationship between knowledge and attitude and consistent condom use among the respondents who engaged high risk sexual behavior in the last 12 months. There was no significant difference regarding knowledge and attitude about HIV/AIDS between the respondents who used condom consistently and who did not use (Table 4).

Table 4. Relationship between knowledge and attitude about HIV/AIDS and consistent condom use in last 12 months.

Variables	N (%)	Knowledge			Attitude		
		Mean ± SD	t	P value	Mean ± SD	t	P value
<b>Consistent condom use in extramarital intercourse (n = 45)</b>							
All the time	5 (11.1)	25.40 ± 2.702	-1.309	0.198	55.2 ± 5.762	-1.861	0.07
Not all the time	40 (88.9)	23.13 ± 3.75			49.65 ± 6.339		
<b>Consistent condom use with casual partner (n = 84)</b>							
All the time	11 (13.1)	23.55 ± 4.083	-0.428	0.67	49.36 ± 7.991	-0.194	0.847
Not all the time	73 (96.9)	22.99 ± 4.033			48.93 ± 6.719		
<b>Consistent condom use with sex workers (n = 69)</b>							
All the time	20 (9.1)	24 ± 4.365	-1.519	0.133	50.05 ± 8.835	-0.421	0.675
Not all the time	49 (71)	22.39 ± 3.845			49.24 ± 6.457		
<b>Consistent condom use in homosexual (n = 42)</b>							
All the time	21 (50)	23.19 ± 4.25	-1.733	0.091	46.52 ± 6.322	0.603	0.55
Not all the time	21 (50)	21 ± 3.937			47.62 ± 5.417		

P value < 0.05 is significant.

Table 5. Relationship between knowledge and attitude about HIV/AIDS and high risk sexual behavior in last 12 months (n = 219).

Variables	N (%)	Knowledge			Attitude		
		Mean ± SD	t	P value	Mean ± SD	t	P value
<b>Extramarital intercourse (n = 100)</b>							
Yes	55 (55)	23.38 ± 3.695	2.062	0.042	50.27 ± 6.461	0.610	0.543
No	45 (45)	25 ± 4.082			51.09 ± 6.934		
<b>Casual partner</b>							
Yes	84 (38.4)	23.06 ± 4.019	2.596	0.01	48.99 ± 6.847	0.568	0.571
No	135 (61.6)	24.48 ± 3.894			49.56 ± 7.547		
<b>Sex workers</b>							
Yes	69 (31.5)	22.86 ± 4.038	2.758	0.006	49.48 ± 7.349	-0.187	0.852
No	150 (68.5)	24.43 ± 3.887			49.28 ± 7.349		
<b>Homosexual</b>							
Yes	42 (19.2)	22.10 ± 4.195	3.402	0.001	47.07 ± 5.841	2.271	0.024
No	177 (80.8)	24.37 ± 3.828			49.88 ± 7.49		

P value < 0.05 is significant.

#### 4. Discussion and Conclusions

This study was conducted with the expectation to identify high risk sexual behavior, knowledge, attitude and prevention practice with regard to HIV/AIDS among male workers working in factories manufacturing alcohol in Myanmar. In this study, the numbers of male workers were significantly higher than female workers in alcohol factories. The risk of HIV infection is high in male dominated profession and working in geographically isolated environment with limited social interaction and health facilities [13]. Moreover, previous studies have shown that factory workers have higher rate of alcohol consumption [14,15] and the people who abuse alcohol are more likely to engage in high risk sexual behaviors which can make them prone to HIV and other sexually transmitted diseases (STDs) [14,16]. In this study, two-third of the respondents consumed alcohol and half of them had intercourse after consuming alcohol. One-third of the workers could procure alcohol product from their factories at lower price and it was found to be one of the most important factor responsible for alcohol consumption. Heavy alcohol use has been correlated with a lifetime tendency toward high-risk behaviors including multiple sex partners, drug abuse, unprotected intercourse, having intercourse with high-risk partners and the exchange of sex for money or drugs [14,17,18].

Previous study has shown that sexual behavior might also be influenced by life experiences and urbanization [19]. In this study, nearly half of the workers migrated from other areas. Many of the respondents engaged in high risk sexual behavior such as extramarital intercourse, intercourse with casual partner and commercial sex workers, and homosexual relationships. Work related factors such as mobility of workers and separation away from families increase the risk of HIV infection [7]. Urbanization (e.g., from rural areas to urban areas or Industrial sites) creates a greater chance of mixing of diverse people at places of destination, which in turn causes a risk or disposed environment for HIV and STDs transmission [19,20]. Though use of condom is a key component of HIV prevention [10,21], in this study, most of the respondents who engaged high risk sexual behavior did not use condom consistently.

The results show that knowledge and attitude about HIV/AIDS were not significantly different between the male alcohol factory workers who used condom consistently and who did not use. This finding was consistent with other studies that showed knowledge did not always translate into practice [19,22]. Similar to another study [23], there was significantly lower knowledge about HIV/AIDS among respondents who engaged in high risk sexual behavior. Since knowledge, attitude and beliefs of

sexual behaviors regarding HIV/AIDS are important in prevention of HIV transmission; limited knowledge among vulnerable population could lead to the rapid spread of HIV/AIDS [10].

Numerous studies have shown that one of the contributing factors for HIV/AIDS prevention and control is the mass media [24]. This study also indicates that information related to HIV/AIDS has reached mainly by mass media including television, newspaper, magazine and books. However, this population had a lower level of knowledge about HIV/AIDS as mass media in Myanmar does not provide enough information related to HIV/AIDS. Apart from mass media, workplace is one of the most important places for transmitting health knowledge and promoting consistent condom use among workers [25]. In this study, only half of the workers received HIV/AIDS related knowledge at their workplace mainly from their peers followed by supervisor, manager and owner.

The study highlights the need of peer education in prevention program of HIV/AIDS among factory workers to modify their knowledge, attitude, belief and behavior as it could affect change at the individual, group and societal level. Since owners and managers were keys to success and sustainability of the prevention programs at workplace, collaboration between them and health organization should be carried out for providing health education as well as for offering voluntary counseling and testing for HIV and STDs. Moreover, free or affordable condoms should be provided to this high risk population, and information, education and communication network should be established to support risk-reduction behavior for the beneficiaries.

This study has some limitations. Since the male workers from alcohol factories in Industrial Zone (A) in Mandalay were included in this study, the sample might not be representative of the factory workers in Myanmar. Secondly, as a cross-sectional study, this study could neither observe the changes over time or inference of causality.

#### 5. Acknowledgements

The authors would like to express our gratitude to Dr. Usaneya Perngporn (Assistant Dean, College of Public Health Sciences, Chulalongkorn University) for her encouragement, support and guidance throughout the study. We would like to acknowledge Dr. Khin Aye Aye (Executive Director, Myanmar Business Coalition on AIDS) and Dr. Htay Maung (Project Manager, Myanmar Business Coalition on AIDS), and the research assistants for their support for data collection. Last but not least, we would like to thank alcohol factories workers, managers

and owners for their kind cooperation.

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