SMOKING BEHAVIOR OF UNIVERSITY OF FORESTRY STUDENTS IN YEZIN, PYINMANA CITY, MYANMAR

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Thesis
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ABSTRACT

A cross-sectional descriptive study was conducted on the smoking behavior of University of Forestry students in Yezin, Pyinmana City, Myanmar to identify the association between factors contributing to smoking behavior among the respondents. Data was collected through a self-administered questionnaire from January 1-20, 2010. Descriptive statistics and Chi-square test were applied to show the frequency of variables and the association between socio-demographic factors, enabling factors, reinforcing factors, and smoking behavior. The total number of subjects in the study was 230 students, aged 19 – 22 years old.

The results reveal that the prevalence of smoking among the respondents was 35.65%, with more male smokers (51.33%) than female (6.34%). The median age to start smoking was 17 years. Most of the smokers were in the age group 21 – 22 (43.53%). This study concluded that gender (p-value < 0.001), level of study (p-value = 0.002%), allowance per month (p-value < 0.001), attitude (p-value = 0.015%), accessibility of cigarettes (p-value < 0.001) were found to have a statistically significant association with smoking behavior. Peer group influences towards behavior and frequency of smoking such as from classmates (p-value < 0.001), roommates (p-value = 0.001%), and close friends (p-value < 0.001), were also found to have a significant influence.

The results suggest that the university management team should develop further research trials, and evaluate a peer education program for students. Furthermore, the university management team should intensify health education through anti-smoking programs in universities in order to successfully accomplish results. Local shops near the university also should be barred from selling cigarettes, and a tobacco-free environment should be established at the university in order to prevent students from smoking.

KEY WORDS : SMOKING BEHAVIOR/ STUDENTS

91 pages.

CONTENTS

CONTENTS (cont.)

LIST OF TABLES

Table **Page**

LIST OF TABLES (cont.)

Table **Page**

LIST OF TABLES (cont.)

Table **Page**

LIST OF FIGURES

.

LIST OF ABBREVIATIONS

AIDS	:	Acquired Immuno-deficiency Syndrome
HBR	:	Health Behavior Research
SEAR	:	South-East Asia Region
COPD	:	Chronic Obstructive Pulmonary Disease
GYTS	:	Global Youth Tobacco Survey
HIV	:	Human Immuno-deficiency Virus
US	:	The United States of America
WHO	:	World Health Organization
NHS	:	National Health Survey
DPRK	:	Democratic People's Republic of Korea

CHAPTER I
INTRODUCTION

1.1 Rationale and justification of the study

The World Health Organization **(**WHO) has estimated that tobacco use will become the leading cause of death and disability (1). Tobacco related disease is the second major cause of death in the world. It is currently responsible for the high death rate of smokers which is three to four times higher than that of non-smokers (2). Approximately five million people die from tobacco-related illness each year. By 2030, ten million people will die each year, with 70 percent of those deaths occurring in developing countries. If current trends continue, about 650 million people alive today will eventually be killed by tobacco, half of them in productive middle age, each losing 20 to 25 years of life (3).

Every year, over 500,000 die in the South East Asia Region due to tobacco-related diseases. Tobacco use is increasing not only among men, but also among children and women and, what is worse, among the poor. Tobacco's prominent role as a major health hazard, and the likelihood of this health hazard increasing dramatically in the future, make it clear that the regular assessment of tobacco use and associated disease trends should be an integral part of a country's health information system (4).

Worldwide, cigarette consumption per adult has increased only very slightly, by 7.1 percent between 1970 and 1985. It fell in many industrial countries. Adult per capita cigarette consumption has increased markedly, eg. 42 percent in Africa, 24 percent in Latin America and 22 percent in Asia (5).

In many industrialized countries, the percentage of smokers has started to fall in recent years. For instance, in the United Kingdom, the percentage of male smokers fell from 65 percent to 45 percent and that of female smokers from 45 percent to 34 percent. In the United States, male smoking prevalence decreased from 54 percent to 29 percent and female prevalence from 36 percent to 24 percent. In Norway, male smoking prevalence decreased from 53 percent to 42 percent in Australia from 72 percent to 33 percent and Canada from 44 percent to 35 percent. By contrast, in developing countries the prevalence of smoking is frequently higher than in the more affluent countries (5).

The number of children and young people starting to smoke has also been increasing. In 1988 the proportion of regular smokers aged 11 to 15 in England was reported to be 8 percent and by 1996 that figure had increased to 13 percent. As 82 percent of smokers take up the habit during teenage years, the increasing rates of young smokers will eventually feed through into adult smoking rates. The cost of smoking is high in term of people's health, with smoking causing over 120,000 deaths in the UK in 1995. Forty-six thousand deaths were from cancer, 40,000 from circulatory diseases and 34,000 from respiratory disease. Smoking also contributes to the gap in healthy life expectancy between the most advantaged and disadvantaged groups of people. Treating illness and disease caused by smoking is estimated to cost base on the UK. National Health System (NHS) up to 1.5 billion pounds every year (6).

Young teen smokers aged between 13 to 15 are about one in five worldwide 80,000 to 100,000 children worldwide start to smoke every day, and half of them live in Asia. Around 50 percent of peer- reviewed studies show that teenagers are strongly influenced in smoking by advertising (7).

In Myanmar, the smoking prevalence rate of those aged 15 years and older is about 31.1percent (8). The number of smokers is expected to rise from 1.3 billion to

1.7 billion in 2025, (7). In 1993, the prevalence of smoking in Myanmar was about 60 percent in both rural and urban areas, (4) and a cross-sectional cardiovascular disease survey of adults within the urban and rural areas of Yangon division, carried out in 1989-90, showed that the overall prevalence of smoking in urban areas was 58 percent and 59 percent in rural areas (9). The overall community prevalence of smoking was found to be over 30 percent, the prevalence among males being 50 percent and among females being a little below 9 percent (10). More than 95 percent of Myanmar population stated to smoke after 10 years old (11).

Moreover, the youth who drop out from the school early, have poor education, and have high income performance have a higher chance of smoking. Therefore, prevention of smoking is essential to reduce the smoking among youth because they are the high risk group (11).

Several studies have been conducted about the prevalence of tobacco use. The sentinel prevalence study of tobacco use in Myanmar was conducted in 2001, and supported by WHO South East Asia Region. It reported the prevalence of current smokers as 31.1 percent of the population above 15 years of age (12, 8).

However, in Myanmar few studies had been conducted on tobacco use by specific age and sex groups, in different urban and rural settings. Although the Global Youth Tobacco Survey can be a starting point representing the national figure for the 13-15 age group of school going children, there is still lack of survey data which can be said to represent national tobacco use and there is no survey data about smoking in Pyinmana City which is the new capital city of the Myanmar. Information about the patterns, extent and trends of tobacco use by the population, the health and economic consequences of tobacco use, and the socio cultural factors which underlie it (4). Therefore, this survey study in Pyinmana City will investigate and ascertain the smoking behavior of university students.

1.2 Research questions

1.2.1 What is the smoking behaviors of students at the University of Forestry in Yezin, Pyinmana City?

1.2.2 What are factors related to smoking behavior of University of Forestry students in Yezin, Pyinmana City?

1.3 Research objectives

1.3.1 General objective

To assess the smoking behavior of students at the University of Forestry in Yezin, Pyinmana City, Myanmar.

1.3.2 Specific objectives

1. To describe the smoking behavior of students.

2. To identify the independent variables including socio demographic factors, enabling factors, and reinforcing factors.

3. To determine the relationship between the independent variables and the smoking behavior.

1.4 Conceptual framework

Independent variables **Dependent variable**

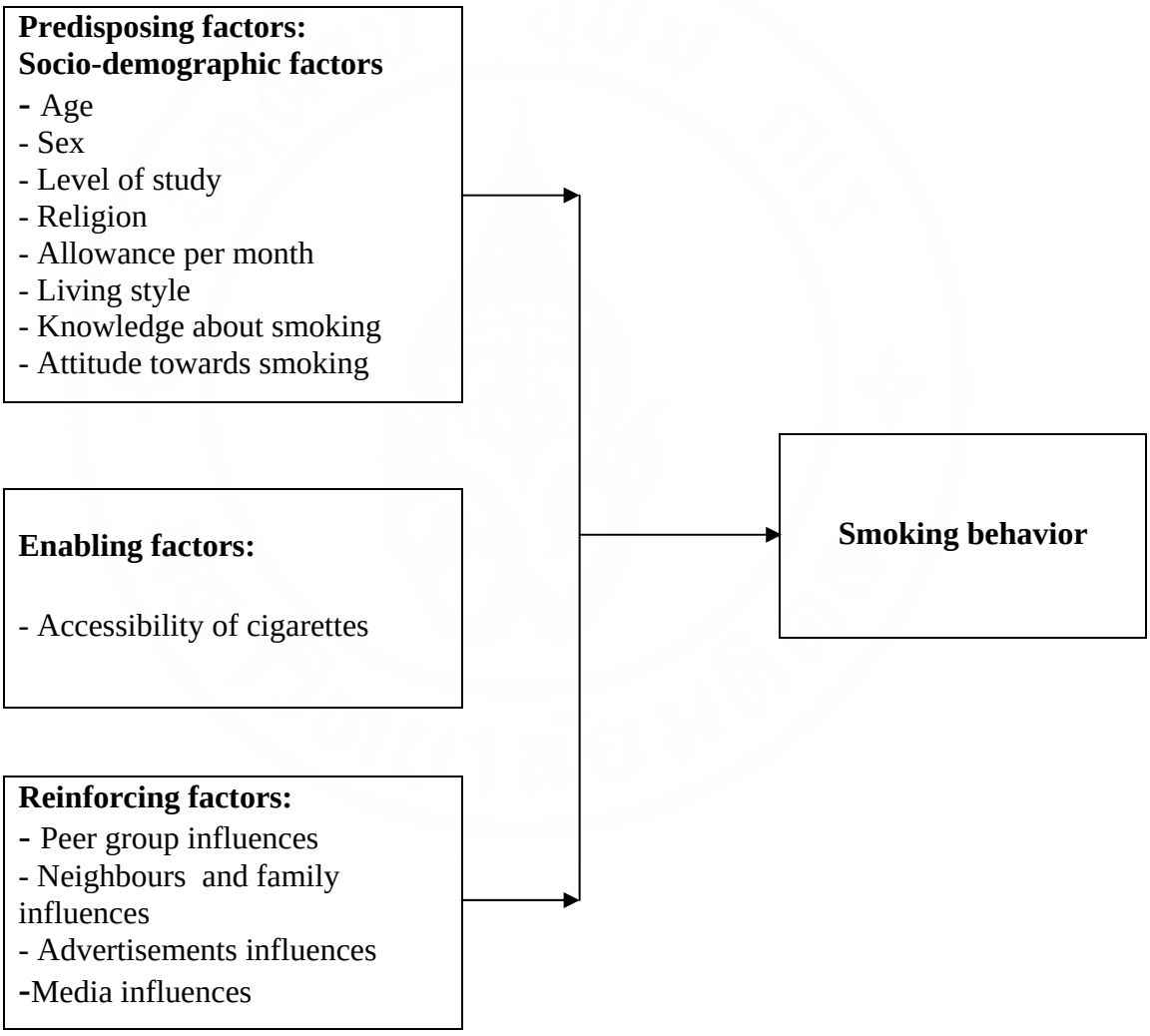

Figure 1.1 Conceptual Framework (Based on Precede-Proceed Model)

1.5 Operational Definition

1.5.1 Dependent variable

Smoking behavior: refers to the characteristic of behaviour that is measured by type of smoking behaviour and pattern of smoking behavior. It is classified into two groups as follow: current smokers and non-smokers. **Current smokers** refer to a student who smokes regularly or occasionally regardless of the number of cigarettes they smoke per day or per month. **Non-smokers** refer to a student who had never smoked before in his or her entire life or who had completely stopped smoking/quit smoking at the time of interview.

1.5.2 Independent variable

Age refers to the age of students.

Sex refers to the gender of students.

Level of study refers to the level of education that students are going to attend. The categories are 1st year, 2nd year and 3rd year.

Religion refers to the religion of the students which are categorized by Buddhism, Muslim, Christian and others.

Allowance per month refers to the amount of money that the respondents receive from their parents per month.

Living Style refers where the students usually lived such as living with parents, with friends, with relatives, in a dormitory or rental house.

Knowledge about smoking refers to the understanding of the students about the toxic substances of cigarette and health related problem.

Attitude towards the smoking refers to the students' beliefs or feelings about smoking concerning the effect of smoking and how to quit smoking.

Accessibility of smoking refers to how easily the students can achieve cigarettes.

Peer groups influence refers to the influence of friends: classmates, roommates and close friends towards smoking behavior of students.

Family and neighbours influence refers to the influence of members in family and neighbours on the smoking behavior of students.

Advertisement influence refers to the influence of advertisement of cigarette on popular brand, famous celebrity, and repetition of advertisement affect to the smoking behavior of students.

Media influence refers to the influence of media of cigarette on drama in T.V, newspaper/ magazines, and internet to the smoking behavior of students.

1.6 Limitation of the study

This study used self-administration questionnaire. It was difficult to control students to answer question by themselves. The students may ask from friends or lecturer. Therefore, quality of data could not be controlled.

CHAPTER II
LITERATURE REVIEW

Regarding the objective of study, this chapter contained the topics as follows:

2.1 The situation of smoking in world
2.2 The situation of smoking in South-East Asia Region
2.3 The situation of smoking in Myanmar
2.4 Health effect of smoking
2.5 Theoretical models
2.6 Related studies

2.1 The Situation of Smoking in World

Tobacco smoking was the biggest preventable cause of morbidity and mortality in the world. Tobacco smoke contains more than 4000 substances which are harmful to the health. Of these, at least 43 substances are toxic. About 5 million people died every year from tobacco related disease in the world, with a higher mortality rate was also occurring in the developing countries. If the current trends of smoking continue in the world, smoking will cause more deaths than HIV/AIDS, suicide, homicide, vehicle accidents, and maternal mortality (13). The trend of smoking among youth was increasing in developing countries but decreasing in developed countries. The rate of smoking amazingly declined from the mid 1960s to 1990s among Americans falling by 23 percent among adults in the year 1997. However, the consumption of tobacco is rising by 3.4 percent per year in the developing countries.

About 15 billion cigarettes are sold daily in the world. Young teens aged between 13 to 15 consulates about one in five smokers worldwide. Between 80,000 to 100,000 children start smoking everyday and half of them live in Asia. Many youngsters want to experiment during their adolescence with new things like smoking, drugs, and etc. During the period of 200-2007, the Global Youth Tobacco survey (GYTS), found that students between the ages of 13-15 years, were likely to be exposed to smoking by advertising on bill boards, newspapers, magazines, promotions and sponsorships (14).

The survey conducted by the Youth Risk Behavior by the Centers for Disease Control and prevention showed that the rate of smoking increased by one third from 1992 to 1997. From 1992 to 1996, the proportion of the students in the tenth grade who were daily smokers increased from 12.3 percent to 18.3 percent. However, there is a slightly declined in the rate of smoking among eight, tenth, and twelve grade students in 1997. The study conducted in the University of Brazil and around the world showed that the smoking habit is acquired early. This finding confirmed that the global tendency of smoking was increasing among the population composed of adolescents and young adults especially, among the University students who were more prone to be involved with smoking (15).

2.2 The Situation of Smoking in South-East Asia Region

World Health Organization (WHO) South-East Asia Region (SEAR) comprise of 11 countries- Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand and Timor Leste. They are inhabited by 1.536 billion people (in 2000) comprising about 25.35 percent of the world population. In regard to economic development level, the countries have also some parity. One half of them are developing countries; while the other half of countries fall into the category of the least developing countries. Four countries of the region- India, Indonesia, Bangladesh and Thailand are among the top 20 tobacco-producing countries in the world. In the last ten years, the production of

major tobacco products, like cigarettes increased in the Region. It has increased substantially in India, Indonesia, Bangladesh, and Myanmar, while it has declined in Sri Lanka and Thailand, In Nepal, it had remained constant in the last ten years. Though recent data are not available from the DPRK, it is quite likely that cigarette production has increased there (16).

Table 2.1 The prevalence of tobacco use in the South- East Asia Region (SEAR)

Adult Tobacco Prevalence			
Country	**Year**	**Current Any Tobacco smoking Male**	**Current Any Tobacco smoking Female**
Bangladesh	2004	47.0	3.8
Bhutan	-	-	-
DPRK	2002	58.6	-
India	2005	33.1	3.8
Indonesia	2004	65.9	4.5
Maldives	2001	44.5	11.6
Myanmar	2003	46.5	13.6
Nepal	2006	34.8	26.4
Sri lanka	2003	30.2	2.6
Thailand	2004	39.8	3.4
Timor	-	-	-

Source: MPOWER- WHO Report on the Global Tobacco Epidemic, 2008 (14).

The above table shows the prevalence of tobacco use in the South- East Asia Region (SEAR) Countries (14). The South-East Asia Region has around 325 million youth aged between 15 and 24. The tobacco industry targets young people in general and young females in particular through advertising, promotion and sponsorship of tobacco products.

Marketing strategies targeted at youth, encourage them to use tobacco products. This is weakening cultural inhibitions to smoking in many countries in the region, where women have traditionally not used tobacco. The rise in the use of tobacco products among young girls is one of the most ominous developments of the tobacco epidemic (17).

2.3 The Situation of Smoking in Myanmar

In Myanmar, a household survey on tobacco economics found that a mean yearly expenditure on tobacco was 2.7 percent of total household expenditure overall, 3.3 percent of total expenditures was for urban households and 2.5 percent of expenditure was for rural households (18). Surveys conducted in 2001 for the Study on Tobacco Economics in Myanmar and the Myanmar Sentinel Tobacco Use Prevalence. The prevalence rates of smokers for males and female were 31 percent and 43 percent respectively. Survey findings for female prevalence differ even more widely, ranging from 7 percent to 50 percent. Most surveys reported female prevalence around 20 percent. According to these reports, the majority of women smokers were from rural areas (18, 8).

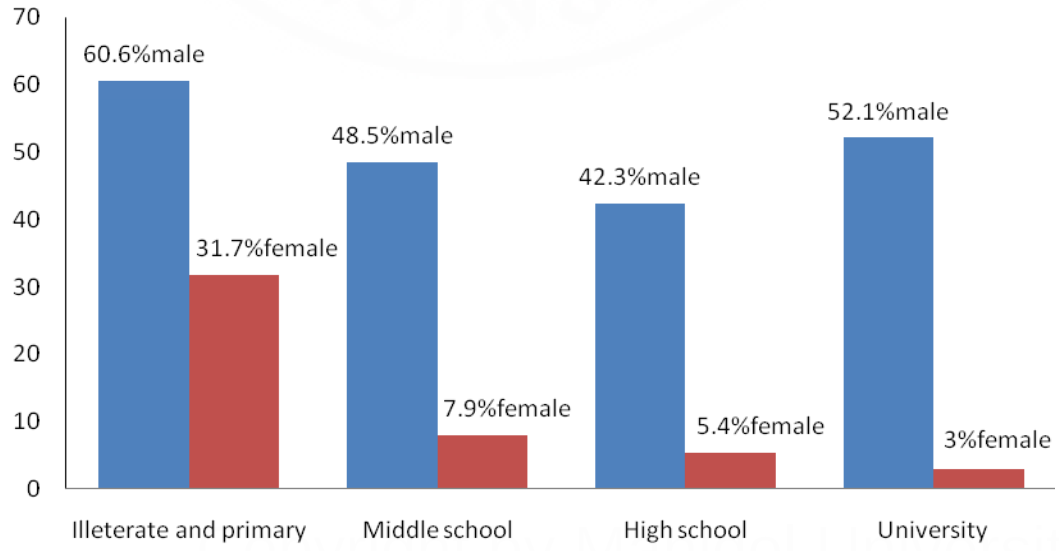

Figure 2.2 Adult current tobacco use and level of education in Myanmar, 2004.

Source : Myanmar Sentinel Tobacco Use Prevalence Study; 2004 (19).

According to the figure 2.2, among male and female, lower prevalence rates of current tobacco use was reported with higher level of education but among males who have university level education current tobacco use rate rises again.

The household survey on tobacco economics reported that cheroots were most commonly used in both urban and rural areas, followed by home-rolled tobacco. Cheroot and hand rolled cheroot smoking decreased with higher levels of education whereas cigarette smoking increased with level of education. Use of smokeless tobacco is also common in Myanmar. The Sentinel Prevalence Study reported prevalence of current smokeless tobacco as 15 percent of the population above 15 years of age, 24 percent of males and 8 percent of females. According to this survey, among current tobacco users, two thirds reported smoking and one third reported chewing. Among chewers most chewed tobacco with betel and only a small percent chewed raw tobacco. Smoking of cheroots and use of smokeless tobacco products is most commonly reported among the low income group and low education group (18).

Different types of tobacco are used in Myanmar. The tobacco is the most commonly smoked in the form of *cheroots* which are thin and long and usually wrapped with "thenatphet", a special form of leaf mainly used for making cheroots and grown in the northern part of the hilly region. Other smoking forms include hand-rolled cheroots, cigarettes, cigars and watery tobacco in some parts of Myanmar.

Cheroots are also hand- rolled but they are mostly made by small cottage industries where hired women roll them with different mixtures of raw tobacco mixed with tangerine, lime and some other ingredients. Hand-rolled cheroots mentioned in this report are the larger cheroots rolled at home usually wrapped in a corn(maize) tusk (pyaung phoo phet); they may also be rolled in smaller and longer forms wrapped by thenatphet (put chun). Smokeless forms of tobacco use include chewing betel quid with raw tobacco and chewing raw tobacco (19). The Sentinel Prevalence Study reported that among current smokers, 73 percent smoked cheroots, 17 percent smoked hand-rolled cheroots, 7 percent smoked cigarettes, 3 percent smoked cigars and 0.2 percent smoked pipes. Cigarette smoking was only reported by 3 percent of the

population above 15 years of age and was higher in urban areas and among males. Cigar and pipe smoking was mostly reported by people aged 55 years or older, and these products were vanishing from the society (18).

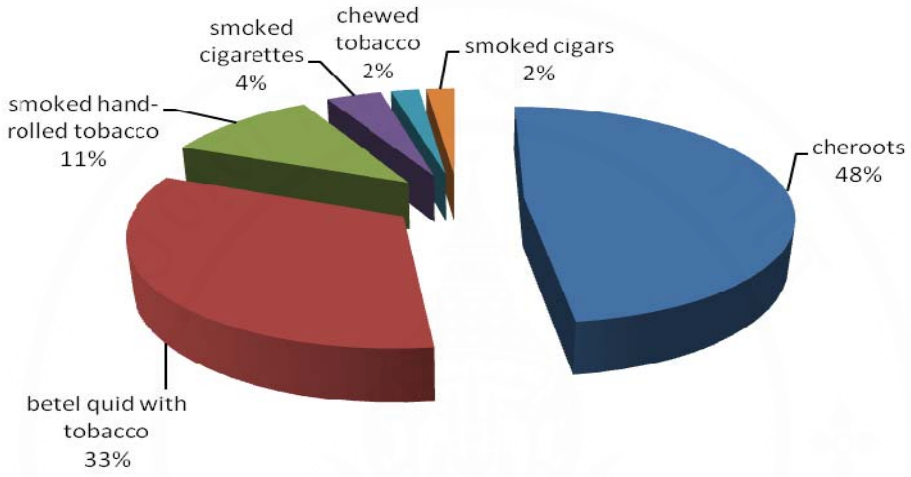

Figure 2.3 The percentage distribution of use of different types of tobacco by current users in Myanmar.

Source **:** Myanmar Sentinel Tobacco Use Prevalence Study; 2004 (19).

In figure 2.3, the percentage distribution of use of different types of tobacco by current users shows that 48 percent used cheroots, 33 percent betel quid with tobacco, 11 percent smoked hand-rolled tobacco, 4 percent smoked cigarettes, and 2 percent chewed tobacco and smoked cigars (19).

2.4 Health effect of smoking

There are some 4000 known chemicals in tobacco smoke; more than 50 of which are known to cause cancer in humans. Tobacco smoke in enclosed spaces is breathed by everyone, exposing smokers and non-smokers alike to its harmful effects (14). According to the International Labour Organization (14), 200, 000 workers die every year due to exposure to second-hand tobacco smoke at work. Not only workers, but also children were the second hand smokers. WHO estimates that around 700

million children, or almost half of the world's children, breathe air polluted by tobacco smoke (14).

Tobacco causes some 5 million premature deaths each year, and a long term user has a 50 percent greater chance of dying prematurely from tobacco related disease. In 1912, American Dr. Isaac Adler was the first person who strongly suggested that there is strongly relationship between smoking and lung cancer. The survey conducted in developed countries show that 90 to 95 percent of lung cancer, 30 to 35 percent of and all cancer deaths, 80 to 85 percent of deaths by chronic obstructive airways, and 20-25 percent of deaths due to cardiovascular disease are directly related to smoking (14).

The long-term effects of tobacco consumption on a society's mortality experience are a very complicated issue. Due to epidemiological evidence implicating tobacco products in various forms of cancer and coronary artery disease, cigarette consumption has declined as a result of heightened public awareness of the health risk, and increasing taxation and regulation, particularly of advertising (20). Tobacco smoking is the primary cause of disease in the cardiovascular system, heart attacks, diseases of the respiratory tract, (such as Chronic Obstructive Pulmonary Disease (COPD), asthma, emphysema,) and cancer, particularly of the lung, larynx, and tongue.

The risk to health is not uniform for all smokers, but depends upon the amount smoked. This means that, those who smoke more force a higher risk; it does not mean that who smoke less reduce the health risk. Data regarding smoking has shown that those who smoke less than 10 cigarettes a day increase 40 percent mortality rate, by 70 percent mortality rate in those person who smoke 10 to 19 cigarette a day, by 90 percent mortality rate in those persons who smoke 20 to 39 cigarette in a day and the person who smoke 2 packets or more in a day by 120 percent mortality rate (2). Only 100 percent smoke-free environments provide effective protection. Contrary to common belief, smoke-free environments are widely supported by both smokers and non-smokers (6).

2.5 Theoretical models

The Precede-Proceed model was first developed in 1999 by Lawrence Green and Kreuter. This model is composed of predisposing factors, enabling factors, and reinforcing factors in the framework. It is for the systematic process of developing the knowledge and education program about the smoking behaviour of the target population. The most effective program to diagnose the problem properly in the population is health education.

PRECEDE is an acronym from Predisposing, Reinforcing, Enabling, Causes in Educational Diagnosis and Evaluation. According to this model, health education is dependent on the voluntary co-operation and the direct participation of the client in a process which allows personal determination of behavioural practice. The degree of change in knowledge and health practice is directly related to the active participation of the clients. This model is multi-dimensional can be found in social/ behavioural science, epidemiology, administration, and education. The purpose of this model is to direct attention to the outcomes rather than inputs which forces the planners to begin planning from an outcome point of view. This model is widely used by health professionals which has been basic for many professional projects.

For health promotion and health education programs the Precede- Proceed model is the best and is widely used. The Precede framework is composed of 3 parts: Predisposing factors, enabling factors, and reinforcing factors. Predisposing factors include a person’s attitudes, knowledge, beliefs, and perceptions which facilitate or hinder a person’s motivation or can be changed by direct contact.

Enabling factors are those barriers, skills or resources which are mainly created by the societal system or by force which involve availability, accessibility and affordability of the health care and community resource which can help the desired behaviour as well environmental changes.

Reinforcing factors include peer group pressure, social support, family, teachers, neighbours, and other control rewards. It comprises the different rewards or feedback the target population receives from others adoption of behaviours may either encourage or discourage the continuation of the behaviours (1).

As the previous studies on smoking behaviour Thapa K. (21) and Nurdin. (22), the Precede-Proceed model had been applied in this study. This model provides a framework for the development of a project focusing on smoking behaviour of the University of Forestry students. The model served as a heuristic device to identify the variables to study. There are three types of factors; predisposing factors which motivate or provide a reason for smoking behaviour, they include age, sex, level of study, religion, allowance per month, living style, knowledge about smoking, and attitude towards smoking. Enabling factors which enable persons to act on their predispositions; these factors include accessibility of cigarette. Reinforcing factors which come into play after a behaviour, has been initiated; they encourage repetition or persistence of behaviours by providing continuing rewards or incentives; these factors include peer group influence, neighbours and family influence, advertisements influence, and media influence. These three factors are provided a collective influence on smoking behaviours.

2.6 The Related Study

2.6.1 Literature regarding the dependent variable

The significance of self-efficacy and personality on smoking behaviour has been firmly established in several studies that the interrelation between biological and psychological factors has exerted its influences on smoking behaviour (23, 24, 25). Elaborated by the social learning theory's perspectives, smoking is difficult to modify because of its ability to provide immediate reinforcement. Nicotine from an inhaled cigarette reaches the brain in seven seconds (twice as fast as intravenous administration from the arm). Furthermore, the habit is tremendously over learned: at

ten puffs per cigarette, the pack-a-day smoker gets more than 70,000 nicotine “shots” in a year-a frequency which is unmatched by any other form of drug taking (23). While most smokers recognize that sustained smoking can lead to a variety of unpleasant disorders, ranging from bronchitis to lung cancer, the substantially far-reaching aversive impacts of smoking are however delayed. Therefore, these insidious effects of smoking are perceived by smokers to have less influence over ongoing smoking behaviour than the influence of other risk behaviours with immediate negative consequences (24).

The stages of smoking behaviour can be broadly categorized into 3 stages: initiation, maintenance, and cessation (26). In the initiation stage, smoking uptake usually occurs during adolescence, while the vast majority of smoking-related deaths occur in middle-aged and elderly people. The longer the onset of smoking is delayed, the less likely a person is to become addicted (27). A relationship has been identified between lower self-esteem and physical self-perception and smoking initiation in youth. Additionally, adult and scholastic competence, locus of control, socialization, susceptibility to peer influence, and risk-taking are also factors associated with the initiation of smoking behaviour.

In moving from experimentation to regular smoking, the most important risk factor is having friends who smoked. Low socio-economic status in childhood also increases the risk for progression to regular smoking and is associated with a reduced likelihood of smoking cessation (27). In most cases, experimental smokers progress towards regular daily use because they have now been addicted to nicotine contained in cigarette. They are therefore entering the stage of Maintenance, which usually lasts for many years (26). Subsequently, some smokers who perceive that the disadvantages of cigarette smoking outweigh its benefits will become ambivalent smokers, and later on progress into the cessation process. There are five stages: 1. Pre contemplation, 2. Contemplation, 3. Preparation, 4. Action, and 5. Maintenance, in the cessation stage, as explained by Tran theoretical model (TTM) proposed by Prochaska (28).

Health is not only a biomedical problem but one which influences the interaction of social, culture, psychological, economic and political factors which the health behaviour of people. The most common type of Health Behaviour Research (HBR) in South East Asia is studies of the knowledge, attitude and practices of patients. Surveys may be used to learn what people believe about hazards of tobacco use related to oral cancer. To ask the question what do people think?" is certainly step one, but step two must be to ask" why do people think that?" further probing will help as to understand cause of behavioural changes. The prevalence of smoking, the age pattern of initiation of smoking, and factors associated with current smoking status among 15-19 year olds in five Asian societies, using data from large-scale youth surveys. The life-table method is used to examine the age pattern of initiation of smoking and logistic regression is used to examine factors associated with current smoking status (29).

Adolescence is a period of exploration. It is natural for teenagers to experiment with smoking, just as they do with other adult behaviour. They spent most of their time in the family and friends at school. Therefore, smoking patterns of family and peer members play a role in predisposing adolescent to use cigarettes. Beyond family and peer factors, curiosity also plays an important role in experimental smoking, compensating for poor achievement, loneliness, broken homes, and other unstable conditions in their lives also play a role in some children becoming regular smokers (22).

Social and environmental factors that include certain types of individual behaviour (smoking, overeating), failures of social organization (loneliness), economic factors (poverty), because health oriented behaviour does not pertain just to those activities concerned with recovering from disease injury. Living a healthy lifestyle and maintaining one's own health in the process has become an increasingly important component of life many people (30).

Behavioural changes resulting from education are by definition voluntary and freely adopted by people, with their knowledge of alternatives and probable

consequences. Some behaviour change strategies may have unethical components. Behaviour modification techniques, qualify as health education only when people freely request them to achieve a specific behaviour result, such as controlling eating or smoking habit, that they desire and four kinds of behaviour or health-related habit that are or can be harmful: tobacco use, alcohol misuse, drug misuse, patter eating patterns, these patterns of behaviour are termed lifestyle. Life-style and habits smoking and heavy drinking both reduce life expectancy (31).

In the previous study, Trinh C. (32) found that 21.8 percent of respondents were currently smoked, and only 15.2 percent of smokers were found to be regular smoking. Most of the respondents preferred foreign brand than the local brand cigarette. 86.5 percent of respondents started to smoke at 16 - 21 years old. Kailawadoko S (33) found that only 13 percent of respondents like to smoke with their smoking friends. A great majority of respondents smoked less than 10 cigarettes per day, and only a few of them smoked greater than 10 cigarettes per day. However, in that study reported that 86.5 percent of respondents started to smoke at 13 – 19 years old.

2.6.2 Literature regarding the independent variable

2.6.2.1 Age

The previous study (34) found that age is the most significant determinant of differences in traits of all person variables. Based on the studies about smoking, Trinh C. (32) and Kailawadoko S. (33) found that there was no association between age group and smoking behaviour.

Death caused by smoking is not substantially reduced by adjustment for behavioural and demographic factors associated with smoking beyond the current adjustment for age and sex. Epidemiology and surveillance research, conducted by the ACS was designed to take into account such factors as education, occupation, race, alcohol consumption and various dietary factors, in addition to age and sex. The researcher found these factors produced only minor changes in the number of deaths blamed on smoking (35). In many countries, including the United

States, most European Union member states, New Zealand, Canada, South Africa, Australia, India, and Brazil, there are minimum smoking ages and it is illegal to sell tobacco products to children. Similarly the Netherland, Belgium, Denmark have age restrictions making it illegal to sell tobacco to children under the age of 16. But in China, Turkey and many other countries children are forced to buy tobacco for their parents (36).

2.6.2.2 Gender

Gender had been considered in many previous studies. Kailawadoko S. (33) and Global Youth Tobacco Survey (GYTS) (37) reported that male were more smoked than female and the report of Global Health Professional Survey in Myanmar, 2006 (38) showed that male were significantly more likely to smoke than female.

2.6.2.3 Religion

Thapa K. (21) found that religion had no association with smoking behaviour. Naing NN. et al. (39) found that religion was the strongest reason among non-smokers for not smoking.

2.6.2.4 Level of study

Nyuyen H. (40) showed that the student who joins in high level of study had higher proportion than whom in the low level. The result also showed that there was significant relationship between smoking behaviour and level of study.

The study conducted in the area of tobacco use reveal that poor and uneducated people are more likely to use tobacco in various forms than people with higher incomes and more education. Research findings from developing and developed countries suggest that tobacco use may be a major contributor to poverty. Expenditures on tobacco products as a percentage of total expenditures are often significant for low income groups, diverting money that could be spent instead on

nutrition, health and education. Tobacco use has been found to contribute to malnutrition in countries such as Bangladesh and India (18).

2.6.2.5 Living style of students

Thapa K. (21) reported that there was no significant association between smoking behaviour of the respondents and living style.

2.6.2.6 Allowance per month

Thapa K. (21) showed that the respondents who got more money smoked more than those who received less allowance per month. More money enabled them to buy more cigarettes. It can say that allowance of respondents is a factor having influence on the smoking behaviour of the respondents. There was also association between smoking behaviour and allowance per month of the respondents.

A study on smoking behaviour of Thai youth that was conducted in Thailand in 1998, concluded that the greater their income the higher the rate of smoking occurrence. This implies that the growing economical status of youth in Thailand. Does contribute to the smoking behaviour of this vulnerable group (41). This problem is part emblematic of the wider process of economic and social restructuring that has affected health-care organization international (42). The study showed the people are very well aware of the health-related risk they face, but that although aware of the effects of behavioural factors, such as smoking, drinking, drugs and exercise on their health status (43).

2.6.2.7 Knowledge about smoking hazards

Thapa K. (21) conducted the survey about smoking behaviour. It showed that 34.63 percent of sample had a moderate level, and only 19.51 percent had good level. In that study, more than one third of moderate knowledge group (39.21%) was smoked, and 26.01 percent of smokers had low knowledge group. However, there was no significant association between smoking behaviour and knowledge about smoking hazards.

Dassanayake BMC (44) and Nurdin. (22) found no significant association between smoking behaviour and knowledge about smoking hazards and smoking behaviour. However, Kailawadoka S. (33) reported a significant association between smoking behaviour and knowledge about smoking hazards. This finding was consistent with finding of previous study. In that study, it has been noticed that health knowledge had less effect on habitual smoking behaviour (45).

2.6.2.8 Attitude towards smoking hazards

Dassanyake BMC (44), Thapa K. (21), and Nurdin. (22) found that significant association between attitude towards smoking hazards and smoking behaviour. In that studies, the most of the respondents who smoked had moderate attitude, while only a few had good attitude. But Kailawadoko S. (33) found that there was no significant association between smoking behaviour and attitude towards smoking hazards. The major determinant of smoking behaviour by young peoples' attitude rather than knowledge. So, more emphasis should be given to improve their attitude towards smoking by adolescents to prevent smoking behaviour.

Psychosocial factors are important predictors of adolescent smoking cessation and reduction, independent of the effects of participating in the intervention. Self-efficacy for quitting, social support, and perceived benefits of quitting was related to positive short-term changes in smoking behaviour. Theorists have identified a number of psychosocial factors believed to play important roles in behaviour change, including attitudes, intentions, skills, self-efficacy, social norms, and intrinsic and extrinsic motivation. Although some psychosocial factors, such as social support, appear to influence both adult and adolescent (46).

2.6.3 Accessibility of cigarette

Trinh C. (32) found that there was no significant association between cigarettes can buy easily from a shop and smoking behaviour. Cooney, Dobbinson and Flaherty on students in New South Wales, Australia, 1992 (47) found that there was no significant association between smoking behaviour and the respondents got cigarettes from local shops near home, near university, and street vendors. Kailawadoko S. (33)

found that there was significant association between smoking behaviour and the respondents can easily get the cigarettes from friends.

Passive smoking or environmental smoke affected a substantial proportion of non-smokers and current smokers. Boys were likely to be more exposed to environmental smoke than girls both at home and smoking. About 67 percent of the students were taught about or had participated in classroom discussions about the dangers of smoking and the effects of tobacco use. It was also observed that almost one in 10 currently smoking students smoke at home, reflecting the absence of any parental pressure to stop them. More than 70 percent young people are able to purchase tobacco products from shops and they were not refused the sale in spite of their young age. This shows the easy accessibility of these products to school students (48).

2.6.4 Peer group influence

Duongphung PL. (49), Kailawadokov S. (33) found that there was significant association between peer group influence and smoking behaviour. This finding supports the research assumption and it could explain the respondent in early adolescent was very important. They concerned about mission out of fun or have problems with friends and losing friends and attempted to imitate the behaviour of the group for the acceptance become one of the groups, friends could influence or be challenge or support them at this period. Study confirmed that peer group influence is a significant contributing factor to the reason for why respondents start to smoke and also, influences.

Reinforcing patterns begin with having friends who are smokers. Spending time with such friends provides ample opportunities to reinforce smoking behaviour. Patterns develop to have a cigarette during breaks at work, with food and beverages, and during social events such as parties. Strong correlations exist between smoking and the consumption of caffeine, alcohol, and marijuana. These patterns move smokers away from healthy and productive lifestyles (50).

2.6.5 Neighbour and Family influences

Trinh C. (32) found that there was no significant association between smoking behaviour and father/ mother frequency influence. However, it also (32) found that there was significant association between smoking behaviour and father/ mother frequency influence. Nurdin. (22) also found that there was association between smoking behaviour and neighbour frequency influence.

2.6.6 Advertisement and Media influences

Kailawadoko S. (33) found that the respondents who exposed to moderate of cigarette advertisement smoked more than those who exposed low. However, there was no significant association between smoking behaviour and advertisement of the cigarette. Thapa K. (21) also found that there was no significant association between smoking behaviour and media influences. In order to decrease the consumption of cigarettes, many governments impose heavy taxation on cigarette and use the money collected on tobacco prevention programs. According to the Centre for Disease Control and Prevention, in 2002, each pack of cigarettes sold in the US cost the nation more than $ 7 in medical care and lost productivity. Raising the price of cigarettes lowers overall cigarette consumption, as shown by substantial scientific evidence. The study concluded that, if there is a 10% increase in the price of cigarettes, cigarette consumption will decrease by 3% to 5%. Instead of increasing the price, the youth, low income people, minorities' smokers are 2 to 3 times more likely to quit smoking.

There is heavy taxation on tobacco in many countries, Denmark, in 1997, had the highest tax burden of $4.02 per pack but many countries including Russia and Greece still allow the bill boards to advertise the use of tobacco and tobacco smoking is still advertised in special magazines, in gas stations and stores, and during sporting events (36).

CHAPTER III
RESEARCH METHODOLOGY

3.1 Research design

This study was a cross-sectional study to describe the smoking behavior and to identify the factors related to smoking behavior of students. The data were collected by a self administered questionnaire.

3.2 Study population

The population were 1st year to 3th year students in University of Forestry, Yezin, Pyinmana City, Myanmar. The students were over 18 years old. The total of students from 1st year to 3rd year was 481 students and the students in each year were as follows.

Table 3.1 The total number of 1st year to 3rd years students in University of Forestry

Year	Students
1st Year	213
2nd Year	182
3rd Year	86

3.3 Sample size

The sample size was calculated by the formula of Cochran (1963) (51):

$$n = \frac{Z^2_{\frac{\alpha}{2}} NP(1-P)}{Z^2_{\frac{\alpha}{2}} P(1-P) + (N-1)E^2}$$

Where:

n = Estimated sample size

$Z^2_{\frac{\alpha}{2}}$ = Standard normal score set at 1.96, corresponding 95% confidence interval (α= 0.05)

p = Prevalence rate of current smokers of population above 15 years old as reported by WHO South East Asia Region in 2001= 31.1% (8)

E = Degree of error, setting at 0.05(5%)

N = The number of student in 1st year to 3rd year at Forestry University (481 students)

$$n = \frac{1.96^2\ (481)\ (0.31)\ (0.69)}{(1.96)^2(0.31)\ (0.69) + (480)\ (0.05)^2} = 196$$

Regarding to the sample size calculation, the sample size was 196. To prevent information loss from incomplete data and withdrawal of participants from this study, the sample size was increased by about 15 percent of original sample size. Therefore, the sample size in this study was 230.

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3.4 Sampling Technique

The samples were determined by using proportional simple random sampling technique among the 1st Year to 3rd Year of students.

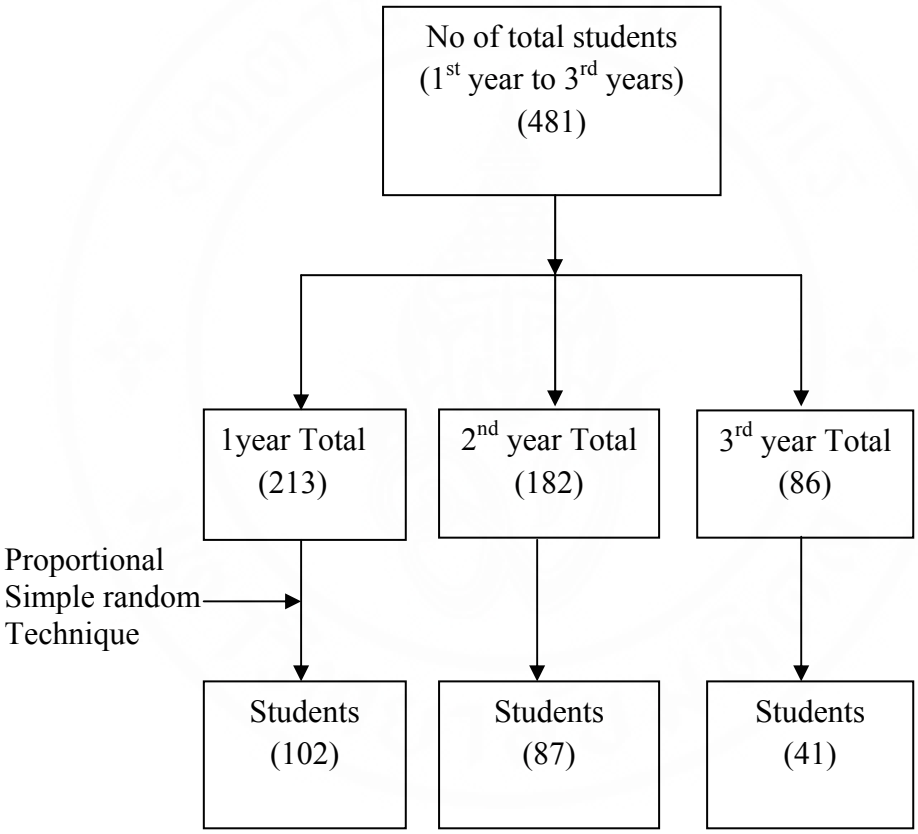

Figure 3.2 Sampling Diagram

3.5 Research instruments

The research instrument was structured questionnaires that were constructed based on conceptual framework. It was composed of four parts and 56 questions. Predisposing factors was asked in the first part about socio-demographic factors including age and sex of students, allowance per month from the parent, knowledge and attitude. The second part of the questionnaires was study on enabling factors: accessibility of cigarettes. The third part of the questionnaires was reinforcement factors including peer group influence, neighbour and family influences, advertisement influence, and media influence. The last part of the questionnaires concerned smoking behaviour of students and its characteristics. The details for each part were as follow:

Part 1: Predisposing Factors

This part consisted of 26 questions. They were 6 questions for age, sex, year, religion, accommodation and allowance, 10 questions for knowledge, and 10 questions for attitude toward smoking.

For knowledge, the multiple choice questions asked about hazardous substances of cigarettes, addictive substances and health related problem. Each correct answer was given '1' and each incorrect answer was given '0'.The total score of knowledge was categorized based on Benjamin's Bloom criteria (52) as follow:

Scoring	**Levels**
<60% (<6)	Low
60% - 80% (6-8)	Moderate
>80% (>8)	High

The questions for attitude were applied by 5 rensis likert scales as strongly agree, agree, not sure, disagree and strongly disagree. There were seven positive and three negative statements. The scoring for positive and negative statements was as follows:

-**Positive** statements:

Strongly agree : 5
Agree : 4
Not sure : 3
Disagree : 2
Strongly disagree: 1

-**Negative** statement:

Strongly disagree: 5
Disagree : 4
Not sure : 3
Agree : 2
Strongly agree : 1

The interpretation of results was classified into three levels of categories: high, moderate and low. The classification was done based on Best Rating Criteria (53).

High 38-50
Moderate 24-37
Low 10-23

Part 2: Enabling factors

This part contained 4 questions about accessibility of cigarette supply. The questions asked about how easily cigarettes could be bought how to get cigarettes, and existence of cigarettes around the university such as on the street, shops near home, shops around university.

Part 3: Reinforcing Factors

This part consisted of 19 questions about peer group influence, family and neighbours influence, advertising influence, and media influence. Influences from these groups were asked into 2 aspects as influencing on smoking behaviour and frequency of smoking behaviour.

Part 4: Smoking behavior

This part consisted of 7 questions about characteristics of behavior. It was measured by type of smoking behavior and pattern of smoking behavior.

3.6 Pretesting

The structured questionnaire has been ensured validity by thesis committee. The translation process from English to Myanmar language was done before the data collection. Pre-testing of the questionnaire was conducted at the University of Agriculture by collecting data from 1st Year-3rd Year. The Kuder-Richardson (KR20) and Cronbach's Alpha were used to analyze reliability of knowledge and attitude towards smoking behavior, respectively. KR20 was 0.66 and Cronbach's Alpha was 0.74. After finished this pre-testing, the questionnaire have developed and modified for the Myanmar language translation to make them more understanding.

3.7 Data collection procedures

The data collection was conducted during January 1- 20, 2010 after receiving approval of Mahidol University Institutional Review Board (COA. No. MU-IRB 2009 / 317.0812).

The process of data collection was:

1. A formal letter from AIHD was sent to rector of the University of Forestry for asking permission to collect data in the university.

2. After getting the permission to collect data from the rector of university, the researcher contacted lecturers in the each level and invited them to be coordinators. The researcher explained the purposes and process of this study, and the protection of various legal and ethical rights to coordinators. The coordinators were asked to make an appointment time which would not affect study times for a meeting between the researcher and students.

3. Researcher went to meet students in appointment time. The researcher explained the purposes and process of this study and about the protection of the students' various legal and ethical rights.

4. The researcher distributed a participation information sheet and questionnaire to the students who were willing to participate in this study.

5. The students read thoroughly the contents of the participation information sheet, and then answered the questionnaire. The time to complete this questionnaire was about 15 - 20 minutes.

6. The students kept the participant information sheet and returned the questionnaire in the boxes that were provided by the researcher in front of lecture room.

3.8 Data analysis procedure and statistical used

After data collection, data was entered to the database created by Epi-data and then analyzed by Minitab. All of the variables were described using descriptive statistics as frequency, percentage, minimum, maximum, mean, and standard deviation. To find out the relationship between students' smoking behavior and the predisposing factors, enabling factors and reinforcing factors, Chi-square test was applied.

CHAPTER IV
RESEARCH RESULTS

This study aimed to describe the patterns of cigarette smoking behavior and factors related to the smoking behavior of University of Forestry students in Yezin, Pyinmana City, Myanmar.

A cross-sectional study was conducted at the University of Forestry. A total of 230 University of Forestry students were asked to answer self-administered questionnaires. Data was collected from January 1- 20, 2010.The descriptive statistics, Chi-square test, and Fisher Exact test with the level of significance set at $\alpha = 0.05$ were used to analyze data.

The study result was presented in 5 parts according to the conceptual framework as follows:

Part 1: Smoking behavior
Part 2: Socio-demographic Factors
Part 3: Enabling factors
Part 4: Reinforcing factors
Part 5: Association between smoking behaviour and the socio-demographic factors, the enabling factors, and the reinforcing factors of those students.

4.1 Smoking behavior

Regarding smoking behavior, the results showed that 48.26 percent of students had never smoked, 35.65 percent of students currently smoked, while 16.08 percent used to smoke but had completely quit smoking (Table 4.1).

Table 4.1 Frequency and percentage of students by smoking behavior

Smoking Behavior	Frequency (n=230)	Percentage (%)
Never smoke	111	48.26
Used to smoke (quit from smoke)	37	16.08
Currently smoke	82	35.65

Regarding to the details of students' smoking behavior as shown in Table 4.2, majority of the students (78.05%) answered that they smoked every day, whereas 14.63 percent of them smoked 1 to 3 days a week, and only 7.32 percent of them smoked 4 to 6 days a week. About 60 percent smoked after meals, 23.17 percent answered that they liked to smoke while they were with their smoking friends, and only 15.85 percent liked to smoke after waking up in the morning.

In reference to the brands of cigarette, nearly two-third of the students (67.08 %) smoked both local and foreign brands, some smoked only foreign brands (21.95%) and local brands (10.97%).

In relation the number of cigarettes smoked in a day, a great majority of the students (92.69%) smoked less than 10 cigarettes per day, and only a few of them smoked greater than 10 cigarettes per day (1.22%). The average of number of cigarettes smoking in a day was 6 cigarettes per day.

Regarding spent on cigarettes money (Kyat), majority of smokers (81.71%) spent 100 – 500 Kyats per day buying cigarettes. The average spent on cigarettes was 437.5 Kyat with a standard deviation 298.4. The minimum and maximum amount was 100 Kyat and 1500 Kyat, respectively. Regarding age at first smoking cigarette, a great majority of the respondents (92.68%) started to smoke at 16 – 21 years old, and the average of started age's students to smoke was 17 years old.

Table 4.2 Frequency and percentage of students by pattern smoking behavior

Smoking Behavior n=230	Frequency n	Percentage %
Frequency of smoking		
Everyday	64	78.05
4 to 6 days a week	6	7.32
1 to 3 days a week	12	14.63
Time to smoke		
After meal	50	60.98
After wake up in the morning	13	15.85
Staying with your smoking friends	19	23.17
Brand of cigarettes		
Local	9	10.97
Foreign	18	21.95
Both	55	67.08
Number of cigarettes smoking in a day		
1 – 10	76	92.69
11 – 20	5	6.09
21 - 25	1	1.22
Mean=6 SD=4.30 Max=25 Min=1		
Spend money for cigarette per day (Kyat)		
100 – 500	67	81.71
501 – 1000	12	14.63
1001 – 1500	3	3.66
Mean=437.5 SD=298.40 Max=1500 Min=100		
Age at first smoking cigarette		
10 – 15	6	7.32
16 – 21	76	92.68
Mean=17 SD=1.20 Max=21 Min=10		

4.2 Socio-Demographic Factors

Table 4.3 shows the percentage of socio-demographic characteristics of the students. Slightly over two-thirds of the respondents (67.01%) were aged 19 to 20 years old and 32.99 percent were aged 21 to 22 years old. The larger group (65.20 %) were male.

In relation to the level of study, the larger group (44.31%) were 1st year students, whereas 37.84 percent of them were 2nd years and only 17.85 percent of them were 3rd years. There found three religions: Buddhist (97.00%), Christian (2.60%), and Muslim (0.40%) in this studied population.

According to the living style, 70.90 percent of the students said that they were living in a rented house or apartment, and 21.30 percent of them lived in a university dormitory. Only a few of them lived with their parents (5.20%) and lived with relatives' houses (2.60%).

Regarding to the allowance per month, most students (64.80%) had money allowance 65,000 – 125,000 Kyat. Only 4.80 percent of them had money allowance >125,000 Kyat per month. The minimum and a maximum were 5000 and 150,000 Kyat, respectively.

Table 4.3 Frequency and percentage of students by socio-demographic characteristics

Socio-Demographic Characteristics	Frequency n=230	Percentage %
Age group (year)		
19 – 20	154	67.01
21 – 22	76	32.99
Mean= 20.13 Median= 20 SD= 0.726 Max= 22 Min= 19		
Gender		
Male	150	65.20
Female	80	34.80
Level of study		
1st Year	102	44.31
2nd Year	87	37.84
3rd Year	41	17.85
Religion		
Buddhism	223	97.00
Christian	6	2.60
Muslim	1	0.40
Living style		
Own house with parents	12	5.20
Living with relative's house	6	2.60
University dormitory	49	21.30
Rental house/ apartment	163	70.90
Allowance per month (Kyats/ month)		
<65000	70	30.40
65000 – 125000	149	64.80
>125000	11	4.80
Mean= 76456.52 SD= 2626.9 Max= 150,000 Min= 5000		

4.2.1 Knowledge about Smoking Hazards

The knowledge was measured by ten multiple choice questions about hazardous substances, addictive substances, and health related problems. The level of knowledge had been divided into three groups: poor, moderate and good based on Benjamin's Bloom criteria (52).

The percentage of students by knowledge level was presented in Table 4.4. It revealed that most of students had a moderate level (64.39%) on knowledge about smoking behaviour, while 21.72 percent of them had poor level. Only 13.89 percent of them had good level of knowledge.

Table4.4 Frequency and percentage of students by level of knowledge about smoking behavior

Level of Knowledge	Number n	Percentage %
Good	32	13.89
Moderate	148	64.39
Poor	50	21.72

Score: Low = ≤5, Moderate = 6 – 8, High = ≥9

Regarding to item analysis in Table 4.5, a majority of the sample (96.09 %) knew that family members can receive hazardous substances from other family member, more than 70 percent of respondents knew about the side effects of smoking (79.57 %), and addictive substances in cigarettes (75.22 %). However, only nearly one-half of the respondents (49.57 %) knew about diseases associated with cigarette smoking.

Table 4.5 Frequency and percentage of students by the correct answer question of knowledge about smoking behavior

Knowledge Questions n=230	Correct Answer	
	Number n	Percent %
What are the hazardous substances from cigarette smoking?	156	67.83
What is the addictive substance in cigarette?	173	75.22
Which one of these diseases has the highest death rate among smokers?	152	66.09
Which disease is not associated with cigarette smoking?	114	49.57
What is the effect of cigarette smoking on fetus in pregnant mother who smoke?	134	58.32
Among maternal smoking group, which substance can penetrate through breast feeding from mother to her infant?	144	62.61
What is the effect of cigarette on nervous system?	132	57.39
If one of family member smoke cigarette, can other family member receive hazardous substance from his/her smoking?	221	96.09
What is not the side effect of the smoking?	183	79.57
Which choice is incorrect?	140	60.87

4.2.2 Attitude towards smoking behavior

The level of attitude was categorized into three level based on Best's Criteria. A score of 38 – 50 was considered as good level, a score of 24 – 37 was moderate level and a score of 10 – 23 was poor level.

The result of attitude level toward smoking behaviour was shown in Table 4.6. It indicated that 80.87 percent of students had moderate attitude, while 16.12 percent of them had poor attitude and only 3.01 percent of them had good attitude.

Table4.6 Frequency and percentage of students by level of attitude towards smoking behavior

Attitude towards Smoking n=230	Frequency	Percent
	n	%
Good	7	3.01
Moderate	186	80.87
Poor	37	16.12

Score: Poor = 10 – 23, Moderate = 24 – 37, Good = 38 – 50

The item analysis was presented in Table 4.7. Most of the students strongly disagreed that smoking in public area do not harm other people (81.65 %), university should not have any regulation about smoking (68.73%), and occasional smoking does not cause any harm (39.61%).

A majority of the students (70.40 %) strongly agreed that females who smoke feel so proud, and most of them strongly agreed that people who are smoking will feel like a real man (54.31 %).

Table 4.7 Frequency and percentage of students by the items of attitude towards smoking behavior

Statement/Item n=230	SA %	A %	NS %	D %	SD %	Mean	Comment
1.Smoking makes you feel stronger.	14.33	37.41	27.44	5.60	15.22	3.20	Moderate
2. Smoking can relieve your tension and anxiety.	17.01	30.41	19.61	11.31	21.66	3.09	Moderate
3.Smoking can help you feel more confidence.	37.42	43.41	13.01	3.52	2.64	4.09	Good
4.Occasional smoking does not cause any harm.	13.01	9.11	20.85	17.42	39.61	2.38	Moderate
5.People who are smoking will feel like a real man.	54.31	9.11	18.31	9.15	9.12	3.90	Good
6.Female who smoke feel so proud.	70.40	9.12	15.22	2.23	3.03	4.41	Good
7.Teenagers who are smoking will feel they are adults.	35.61	8.22	17.42	17.44	21.31	3.19	Moderate
8.University should not have any regulation about smoking.	5.71	3.90	3.85	17.81	68.73	1.60	Poor
9.It is easy to quit smoking.	44.33	7.02	25.21	9.11	14.33	3.57	Moderate
10.Smoking in public area do not harm other people.	0.01	1.31	0.83	16.11	81.65	1.23	Poor

SA= Strongly agree, A= Agree, NS=Not Sure, D=Disagree, SD=Strongly Disagree

Score: Poor = 1 – 2.33, Moderate = 34 – 3.66, Good = 3.67 - 5

4.3 Enabling Factors

According to the accessibility of cigarette, a majority of the students (96.99 %) replied that it was very easy to buy cigarette. They could buy cigarettes from street vendors (43.03 %) and local shop around university (42.64%) respectively. Only 14.33 percent of them could buy cigarettes from local shop near home.

The students responded that they could ask cigarettes from their friends at university (32.64%), and other friend (23.01%). However, a few of students could ask cigarette from their parents (2.20%), and friends near home (3.03%). A great majority of the students (95.22%) replied that the cost of buying a pack of cigarette was cheap (see table 4.8).

Table 4.8 Frequency and percentage of students by accessibility of cigarette

Accessibility n=230	Frequency n	Percent %
Easy to buy cigarette		
Yes	223	96.99
No	7	3.01
Place to buy cigarette		
Local shop near home	33	14.33
Street Vendors	99	43.03
Local shops around University	98	42.64
Easy to get from other one without buying		
From my parent's	5	2.20
From my friend at university	75	32.64
From my friend near home	7	3.03
From other friends	53	23.01
Never want to get it	90	39.12
Cost of Cigarette		
Cheap	219	95.22
Not Cheap	11	4.78

4.4 Reinforcing factors

4.4.1 Advertisements factors

The effects of cigarette advertisements on the smoking were measured by the question in the advertisement part. The level of advertisements had been divided from the total score by applied Benjamin's Bloom criteria (52). The students who obtained total score less than 60 percent were categorized into the poor level, where as those with total score between 60 to 80 percent were classified into the moderate level, and greater than 80 percent were classified into the high level.

The results in Table 4.9 shows that a moderate level of advertisements influencing on smoking behaviour (57.43%) was found, while 34.74 percent of them showed a low level and only 7.83 percent showed a high level of advertisement.

Table 4.9 Frequency and percentage of students by level of advertisement influence

Level of Advertisements	Number Percent	
	n=230	%
High	18	7.83
Moderate	132	57.43
Low	80	34.74

Results in Table 4.10 revealed that 64.84 percent of the smokers mentioned that cigarette advertisements have many effects on their smoking behaviour, and 78.32 percent of respondents indicated that smoking advertisements are bad for young children. However, 37.82 percent of the respondents indicated that smoking advertisement did not play an important role in smoking among students. Most of students (67.44%) indicated that smoking advertisements should be totally banned and nearly half (47.01%) of the students indicated that cigarette advertisements were banned, smoking behaviour would be reduced,

Table 4.10 Frequency and percentage of students by the items of influence of cigarette advertisements

Cigarette Advertisements n=230	Yes Answer	
	n	%
Cigarette advertisements have many effects on smoking behaviour	149	64.84
Smoking advertisement does not play an important role in smoking among students.	87	37.82
Smoking advertisements should be totally banned.	155	67.44
Cigarette advertisements were banned, smoking behaviour will be reduced.	108	47.01
Smoking advertisement is bad for young children.	180	78.32

Regarding to the type of cigarette advertisement influence, the respondent mentioned that popular of cigarette brand (46.12%) and repetition of advertisement (31.32%) influenced on smoking of them (Table 4.11).

Table 4.11 Frequency and percentage of students by the type of cigarette advertisements influences

Type of Advertisements n=230	Frequency	Percent
	n	%
Popular brand	106	46.12
Famous people	52	22.56
Repetition of advertisement	72	31.32

According to media influences to smoking, drama in TV was the most significant media influencing to smoking behaviour (64.78%). However, only 10.01 percent of them indicated that the internet was the media influencing to smoking (Table 4.12).

Table 4.12 Frequency and percentage of students by the type of cigarette media influences

Type of Media n=230	Frequency	Percent
	n	%
Drama in T.V	149	64.78
Newspaper/ Magazines	58	25.21
Internet	23	10.01

4.4.2 Peer group influence

Regarding to peer group influence, the result of the study showed that classmates, roommates and close friends influence students to smoking at 39.01 percent, 28.38 percent, 32.61 percent, respectively (Table 4.13).

Table 4.13 Percentage and frequency of students by peer group influence

Peer Group Influence n=230	Yes Answer	
	n	%
Classmates	92	39.01
Roommates	72	28.38
Close friends	78	32.61

The minority of the students (27.03 %) thought that their classmates influences on the frequency of smoking, 22.64 percent of the students answered that roommates influences on the frequency of smoking and 24.85 percent of them showed that their close friends influences on the frequency of smoking (Table 4.14).

Table 4.14 Percentage and frequency of students by peer group influence towards frequency of smoking

Peer Group Influence toward Frequency of smoking n=230	Yes Answer	
	n	%
Classmates	62	27.03
Roommates	52	22.64
Close friends	57	24.85

4.4.3 Family and Neighbours influence factors

Table 4.15 and Table 4.16 shows that fathers/ mothers and relatives had fewer influences on smoking and frequency of smoking than neighbours. Nearly 25 percent of students answered that neighbours influences on smoking behavior (27.02%) and the frequency of smoking (26.54%).

Table 4.15 Frequency and percentage of students by family and neighbours influences towards smoking behavior

Family and Neighbours Influence n=230	Yes Answer	
	n	%
Father/mother influences	19	8.33
Relative influences	21	9.12
Neighbours influences	62	27.02

Table 4.16 Frequency and percentage of students by family and neighbors group influences towards frequency of smoking

Family and Neighbors Influence toward Frequency of smoking n=230	Yes Answer	
	n	%
Father/mother influences	17	7.43
Relative influences	14	6.11
Neighbours influences	61	26.54

4.5 Association between Predisposing Factors and smoking Behavior

Based on the analysis of association, the characteristic of smoking behavior was considered 2 categories: currently smoke and no smoke. The combination between the students who had never smoked before in their entire life and the students who had ever smoked but they had completely stopped smoking/quit smoking at the time of interview was set as no smoke.

Table 4.17 shows the association between socio-demographic factors and smoking behavior. It revealed that gender, level of study, and allowance of respondents were found statistically association with smoking behavior (p-value < 0.01). The results also showed that males smoke more than females. The student who joins in the third year had higher proportion than the one who joins in the first and second years. The students who had more allowance had higher proportion than the one who had less allowance.

Table 4.17 Association between socio-demographic factors and smoking behavior

Predisposing Factors	Smoking Behavior				χ^2	p-value
	Currently Smoke		No Smoke			
	n	%	n	%		
Age group (yrs)						
19 – 20	72	34.80	135	65.20	0.682	0.409
21 – 22	10	43.53	13	56.47		
Gender						
Male	77	51.33	73	48.67	46.224	<0.001**
Female	5	6.34	75	93.76		
Level of study						
1st Year	38	37.33	64	62.67	12.613	0.002*
2nd Year	21	24.08	66	75.92		
3rd Year	23	56.12	18	43.88		
Religion						
Buddhism	78	35.00	145	65.00		0.228[F]
Christian/Muslim	4	57.11	3	42.89		
Living style						
Own house with parents	1	8.31	11	91.69	4.221	0.239
Living in relative's house	2	33.32	4	66.68		
University dormitory	19	38.79	30	61.21		
Rental house/ apartment	60	36.79	103	63.21		
Allowance per month (Kyats)						
<65000	11	15.69	59	84.31	17.442	<0.001**
65000 – 125000	66	44.31	83	55.69		
>125000	5	45.47	6	54.53		

* Significant at p-value < 0.01

** Significant association at p-value < 0.001

[F] Fisher's Exact Test

Table 4.18 shows that there was no significant association between knowledge level and smoking behaviors.

Table 4.18 Association between knowledge about smoking hazards and smoking behavior

Knowledge	Smoking Behavior				χ^2	p-value
	Currently Smoke		No Smoke			
	n	%	n	%		
High	11	34.44	21	65.56	2.860	0.239
Moderate	58	39.21	90	60.79		
Low	13	26.01	148	63.99		

However, the attitude towards smoking hazards was found statistically association with smoking behavior (p-value = 0.015) (Table 4.19).

Table 4.19 Association between attitude about smoking behavior and smoking behavior

Attitude	Smoking Behavior				χ^2	p-value
	Currently Smoke		No Smoke			
	n	%	n	%		
Good	0	0.00	7	100	8.438	0.015*
Moderate	74	39.80	112	60.20		
Poor	8	21.57	29	78.43		

*Significant at p-value < 0.05

4.6 Association Between Enabling Factors and Smoking Behavior

The association between the accessibility of cigarette and smoking behavior was shown in table 4.20. The one who felt easy to buy cigarette from shop in university (36.00%) had more proportional than the one who felt difficult (20.03%). However, the result showed that there was no significant association between the easy to buy cigarettes from a shop in the university and smoking behavior.

The one who felt easy to buy cigarette at local shops near home (42.41%) had more proportion to smoke than the one who felt easy to buy it from street vendors (29.32 %) and local shops around university (39.82%). However, there was no significant association.

The student's smokers (56.43%) answered that they could get cigarette easily from other one and only a few (2.14%) answered that they could not get cigarette easily from other one. There were significant association between the easy to get from other one and smoking behavior (p-value < 0.001).

The results showed that 36.52 percent of smoking students felt cheap on the cost of cigarette and only (18.22%) did not feel cheap. However, it was no significant association between cost of cigarette and smoking behavior.

Table 4.20 Association between accessibility of cigarette and smoking behavior

Accessibility of Cigarette	Smoking Behavior				χ^2	p-value
	Currently Smoke		No Smoke			
	n	%	n	%		
Easy to buy cigarette						
Yes	81	36.00	144	64.00	0.546	0.460
No	1	20.03	4	79.97		
Place to buy cigarette						
Local shops near home	14	42.41	19	57.59	3.138	0.208
Street Vendors	29	29.32	70	70.68		
Local shops around University	39	39.82	59	60.18		
Easy to get from other one						
Yes	79	56.43	61	43.57	68.776	<0.001*
No	3	2.14	87	62.14		
Cost of cigarette						0.215
Cheap	80	36.52	139	63.48	1.537	
Not cheap	2	18.22	9	81.78		

* Significant at p-value < 0.001

4.7 Association Between Reinforcing Factors and Smoking Behavior

The association of reinforcing factors and smoking status was shown in Table 4.21. It shows that there was a significant association between peer group: classmate influence, roommate influence, and closed friend influence and smoking behaviour (p-value < 0.001, p-value = 0.001, p-value < 0.001, respectively). The result in this table also revealed that more than 50 percent of students who felt that peer groups influences on their smoking smoked.

Table 4.21 Association between peer group influence and smoking behavior

Peer Group Influence	Smoking Behavior				χ^2	p-value
	Currently Smoke		No Smoke			
	n	%	n	%		
Class mates						
Yes	49	53.33	43	46.67	20.724	<0.001**
No	33	23.89	105	76.11		
Roommates						
Yes	37	51.42	35	48.58	11.314	0.001*
No	45	28.52	113	71.48		
Close friends						
Yes	43	55.14	35	44.86	19.515	<0.001**
No	39	25.72	113	74.28		

*Significant at p-value < 0.01

**Significant at p-value < 0.001

Table 4.22 shows that 61.28 percent of students who felt that classmate had influence on frequency of smoking smoked. More than 50 percent of them who felt that close friend (59.56%) and roommate (53.84%) had influenced on frequency of smoking smoked. There was significant association between peer group: classmates, roommates, and close friends and smoking behavior of the students (p-value < 0.001, p-value = 0.001, and p-value < 0.001 respectively).

Table 4.22 Association between peer group influences towards frequency of smoking and smoking behavior

Peer Group Influences towards frequency of smoking	Smoking Behavior				χ^2	p-value
	Current Smoke		No Smoke			
	n	%	n	%		
Class mates						
Yes	38	61.28	24	38.72	4.320	<0.001**
No	44	26.21	124	73.79		
Roommates						
Yes	28	53.84	24	46.16	9.695	0.002*
No	54	30.31	124	69.69		
Close friends						
Yes	34	59.56	23	40.44	19.022	<0.001**
No	48	27.67	125	72.33		

*Significant at p-value < 0.01

**Significant association at p-value < 0.001

Table 4.23 shows the result of family and neighbour influences on smoking behaviour. The results revealed that only neighbours found association with smoking behaviour (p-value < 0.001). It also shows that 61.33 percent of students who neighbours had influenced on smoking behavior smoked, while 26.23 percent of them who neighbours did not have influence on that smoked.

Table 4.23 Association between family and neighbors influence and smoking behavior

Family and Neighbors Influence	Smoking Behavior				χ^2	p-value
	Currently Smoke		No Smoke			
	n	%	n	%		
Father/mother						
Yes	6	31.56	13	68.44	0.150	0.699
No	76	36.02	135	63.98		
Relative						
Yes	6	28.64	15	71.36	0.505	0.477
No	76	36.43	133	63.57		
Neighbors						
Yes	38	61.33	24	38.67	24.320	<0.001*
No	44	26.23	124	73.77		

*Significant at p-value < 0.01

The study showed that 60.69 percent of the students who neighbours had influence on frequency of smoke smoked, while 26.56 percent of the students who those did not have influence on frequency of smoke. There was a significant association between neighbours frequency influences and smoking behavior (p-value < 0.001) (Table 4.24).

Table 4.24 Association between smoking behavior and opinion of students toward family and neighbors influence on the frequency of smoking

Family and Neighbors on frequency of smoking Influence	Smoking Behavior				χ^2	p-value
	Current Smoke		No Smoke			
	n	%	n	%		
Father/mother						
Yes	5	29.42	12	70.58	0.312	0.577
No	77	36.22	136	63.78		
Relative						
Yes	3	21.43	11	78.57	1.315	0.252
No	79	35.66	137	64.34		
Neighbors						
Yes	37	60.69	24	39.31	22.623	<0.001*
No	45	26.56	124	73.44		

*Significant at p-value < 0.01

The result in Table 4.25 shows that the students who exposed to moderate level of cigarette advertisement smoked less than those who exposed low. However, the results showed that there was no significant association between cigarette advertising and smoking behaviour.

Table 4.26 also found that there was no significant association between each item of advertisement and smoking behaviour.

Table 4.27 also shows that there was no significant association between each item of media influence and smoking behaviour.

Table 4.25 Association between advertisements influence and smoking behavior

Advertisements	Smoking Behavior				χ^2	p-value
	Currently Smoke		No Smoke			
	n	%	n	%		
High	6	33.32	12	66.68	1.011	0.603
Moderate	44	33.62	88	66.38		
Low	32	40.00	48	60.00		

Table 4.26 Association between type of advertisement influence and smoking behavior

Advertisement	Smoking Behavior				χ^2	p-value
	Currently Smoke		No Smoke			
	n	%	n	%		
Popular Brand						
Yes	42	39.59	64	60.41	0.245	0.153
No	40	32.31	84	67.69		
Famous people						
Yes	16	30.79	36	69.21	0.403	0.253
No	66	37.11	112	62.89		
Repetition of advertisement						
Yes	24	33.33	48	66.67	0.620	0.336
No	58	36.68	100	63.32		

Table 4.27 Association between type of media influence and smoking behavior

Media	Smoking Behaviour				χ^2	p-value
	Currently Smoke		No Smoke			
	n	%	n	%		
Drama in T.V						
Yes	55	36.89	94	63.11	0.588	0.347
No	27	33.33	54	66.67		
Newspaper/Magazines						
Yes	21	36.22	37	63.88	0.919	0.519
No	61	35.55	111	64.45		
Internet						
Yes	6	26.11	17	73.89	0.313	0.220
No	76	36.67	131	63.33		

CHAPTER V
DISCUSSION

A cross sectional study was conducted of 230 students for describing the smoking behavior of students and to identify the association between smoking behavior and the independent factors including age, sex, level of study, religion, allowance per month, living style, knowledge about smoking, and attitude towards smoking.

The questionnaire consisted of 4 parts: predisposing factors, enabling factors, reinforcing factors, and smoking behavior of the students. A total of 56 questions were used as the tool for data collection. The self-administered questionnaire was used and tried out for reliability of attitude part and knowledge part in the University of Agriculture. Coefficients of reliability were 0.74 and 0.66 for attitude part and knowledge part respectively. The finding from this study about smoking behavior of the University of Forestry students in Yezin, Pyinmana City, Myanmar was discussed as follows.

5.1 Socio-Demographic Factors

5.1.1 Age

In this study, the majority of students who smoked were 21 – 22 years. It is natural for teenagers to experiment with smoking. They spent most of their time at university (22). There is an also higher chance of apart from their parents in order to get higher education; most students in these ages get an opportunity to live without parent in a dormitory, or hostel. So, they get a higher chance to stay with friends, which makes higher chance of exposure to smoke.

The results also showed that there was no significant association between age and smoking behaviour. This study got similar results with the study of Trinh C. (32) and Kailawadoko S. (33). They also reported that there was no association between age and smoking behaviour. However, the previous study conducted by Thapa K. (21) found the different result, that there was no significant association between age and smoking behaviour.

5.1.2 Gender

According to the gender, between male and female groups, male groups smoked at a higher proportion than the female. This result was the same of Global Health Professional Survey in Myanmar (2006) (38) which found that males were significantly more likely to smoke than females. This result also showed that the gender of the students had a statistics association significant with the smoking behaviour of the students (p-value < 0.001). In conclusion, gender has impact on performance of smoking behaviour. This is supported by national statistics general household survey, 2005 (54). It also report that male are still more smoked rather than female. However, the different result was found by Thapa K. (21).

5.1.3 Religion

Most of the students who were Christian and Muslim smoked, only 35.00 percent of them who were Buddhist smoked. The results also showed that there was no association between religion and smoking behaviour (p-value=0.228). This result could support by the work of Thapa K. (21). It found that religion had no association with smoking behaviour. This may that smoking depends on the behaviour of each person. However, the study of Naing NN. et al. (39) found that religion was the strongest reason among non-smokers for not smoking.

5.1.4 Level of study

Students in later years of study smoked more than students in lower years. The result also showed that there was significant relationship between smoking behaviour and year of study (p-value = 0.002). It was the same result of the Nguyen H. (40). This may because the student who studied in later years had more allowance money from their parents. Therefore, they have capable to pay for cigarettes. This is supported by the results of this study that the students who got more allowance were to be smoker than who got few allowance. Another reason might that they may have had more stress to study, then they would like to relief the stress by smoking.

5.1.5 Living style of students

In the living style of students, there was no significant association between living style and smoking behaviour of the students (p-value=0.239). This result corresponds to the research of Thapa K. (21). However, the students who lived without parents had higher proportion to smoke than the one who lived with parents. It because that they may have influence from their friends, and they followed their friends to smoke. This is supported by the result of this study that peer groups influences on the students behaviour.

5.1.6 Allowance per month

Concerning allowance per month, the result showed that the students who got more than 125,000 Kyat per month smoked more than those who received less allowance per month. More money made them is capable to buy more cigarettes. It can be said that allowance of students is a factor influencing on the smoking behaviour of the students. There was also an association between smoking behaviour and allowance per month of the students. It was the same result as Thapa K. (21).

5.1.7 Knowledge about smoking hazards

Concerning the knowledge of the students, this study revealed that a majority of students (64.39%) had a moderate level. Only 13.89 percent of them had a good level of knowledge. However, there was no significant association between knowledge about smoking hazards and smoking behaviour. The result was the same as Nurdin (22), Dassanayake BMC (44) and Best JW. (45). This may that smoking depending on individual behaviour. Health knowledge had less effect on habitual smoking behaviour (45). However, the outcome of this study was different from Kailawadoko S (33) and Thapa K. (21). They reported that a significant association between knowledge about smoking hazards and smoking behaviour was found.

5.1.8 Attitude towards smoking hazards

According to the attitude towards smoking hazards, the most of the students who had moderate attitude was smoked (39.80%). The result showed that there was a significant association between smoking behaviour and attitude towards smoking hazards (p-value=0.015). This study got similar as the results from study of Nurdin (22), Thapa K. (21) and Dassanyake BMC (44).

The major determinant of smoking behaviour by young peoples' attitude rather than knowledge (50). From this result, it could be concluded that if attitude towards the smoking behaviour can be improved among students through anti-smoking and health promotion programmes, the number of smokers can be certainly reduced. However, it was different from Kailawadoko S. (33). It found that there was no significant association between smoking behaviour and attitude towards smoking hazards.

5.2 Accessibility of cigarette

The study revealed that the accessibility of cigarette in items of source and distribution, more than a third of the students (36.00%) who answered that they could easily buy a cigarette smoked. However, the result shows that there was no significant association between easy to buy cigarettes and smoking behavior. This finding was closed to the outcome of Trinh C. (32).

The students who got cigarettes from local shops near home (42.4%), local shops around university (39.82%), and street vendors (29.32%) smoked. However, there was no significant association between place to buy cigarette and smoking behavior. This study was similar to the Cooney, Dobbinson and Flaherty on students in New South Wales, Australia (1992) (47).

More than half of the student (56.43%) who felt easy to get cigarettes easily from other one smoked. There was significant association between easy to get cigarette from other one and smoking behavior (p-value < 0.001). This study was supported by the Kailawadoko S. (33). It reported that their friends smoked and the students can get very easily to get from them. This concluded that smoking behavior may be influenced by others: friends, neighbours and parents. So, friends may be important influence on student's smoking.

The results shows that 36.52 percent of students who felt cheap cigarette pack from shop in university smoked and only 18.22 percent of them who felt that it was not cheap smoked. The results were different from Trinh C. (32). In that study found that about (74.7%) of smoking students felt that it was not cheap and only 44.9 percent of students felt that it was cheap. However, this results may imply that the cost of cigarette per pack was raised then it could be influenced the prevalence of smoking.

5.3 Peer group influence

The results of this study indicated that there was a significant association between peer group: classmates' influences, roommates' influences, and close friends influences and smoking behavior (p-value < 0.001, p-value= 0.001, p-value < 001 respectively). This study was the same results as Kailawadoko S. (40), Trinh C. (44), Nurdin (22), and Duongphung PL. (49). It could explain that the student in early adolescent was very important. They are concerned about missing out of fun or having problems with friends and losing friends and attempted to imitate the behavior of the group to gain acceptance and become one of the group, friends could influence or be challenge or support them at this period. This study confirms that peer group influence is a significant contributing factor to the reason for why students start to smoke and also influences smoking. The influence of peer group friends as shown by this study signifies the importance of using this powerful factor in attempting to bring about favorable chances on the smoking status among students.

5.4 Neighbor and Family influence

In the study, 29.42 percent of students who felt that father/ mother had influence on frequency of smoking smoked, while 36.22 percent of the one who did not felt that smoked, however, there was no significant association between father/ mother frequency influence and smoking behaviors. This result was the same of Nurdin (22). However, the finding of this study was different to the survey of Trinh C. (32).

This study showed that 60.69 percent of the students who answered that neighbours were frequency influenced smoked. There was significant association between neighbours frequency influence and smoking behaviour (p-value < 0.001). However, this study result was different to the finding of Nurdin (22).

5.5 Advertisement and Media influence

In this study, the students who exposed to moderate of cigarette advertisement smoked less than those who exposed low. Most of the respondents (39.59%) received that influenced by popular brand, and 33.33 percent received that influenced by repetition of advertisement. This may because of most of the students were preferred popular brand of cigarette than other kinds of cigarettes. But there was no association between smoking behavior and advertisement influence. This fact corresponds to the Kailawadoko S. (33).

Nearly 35 percent of students who had influence from drama in TV smoked, however, only 26.11 percent of them who thought that internet influence smoked. It can be assumed that if smoking advertisement drama in T.V can be banned, the number of smokers will be reduced. However, there was no significant association between media influence and smoking behavior. This is the same result of Thapa K. (21).

5.6 Smoking Behaviour

According to the smoking behaviour of the students, 35.65 percent of students were currently smoked. This result is more than the finding of Trinh C. (32). It showed that 21.8 percent of students who was currently smoked. It might be because the research was conducted at different countries and with different target group.

A majority of the students (78.05%) answered that they smoke every day. However, Trinh C. (32) reported that only 15.2 percent of smokers were found to be regular smoking. This may because most of the students lived in university dormitory, and rental house or apartment so they had chances to smoke every day. The result may be higher than the result of Trinh C. In the study, 23.17 percent of the students answered that they like to smoke while they are staying with their smoking friends. However, Kailawadoko S. (33) found that only 13 percent of the respondents like to smoke with their smoking friends. In reference to the brand of cigarette, nearly two-

third of students (67.08 %) smoked both of local and foreign brands. This was different from Trinh C. (32) who reported that the respondents preferred foreign brand than the local brand cigarette. This may because most of the local brands and foreign brands were cheap and the tax on cigarettes was also not high in Myanmar.

In relation to the number of cigarettes smoked in a day, a great majority of the respondents (92.69%) smoked less than 10 cigarettes per day, and only a few of them smoked greater than 10 cigarettes per day (1.22%). This finding was similar to the Kailawadoko S. (33). According to the result, the students smoked 6 cigarettes per day. This is quite higher than the previous study of Trinh C. (32), that the respondents smoked less than 3 cigarettes per day. This may because in this study, most of students got money from their parents and it was very easy to buy cigarette at the university, and the rule and regulation for anti-smoking is not very effective among the students. Another reason is that they get freedom with less strict rules and regulations compared with secondary or high school.

Regarding to age at first smoking cigarettes, a great majority of the students (92.68%) started to smoke at 16 – 21 years old, and only few 7.32 percent of them started to smoke at 10 – 15 years old. This aged is teenagers and they start to live apart from their parents. Teenagers always believe their friend. The student may follow their friend for smoking without any guardian from their parent. The age of the initiation of smoking in this study is higher than the finding of Kailawadoko S. (33). In that study reported that 86.5 percent started to smoke at 13 – 19 years old. However, it was similar of Trinh C. (32).

CHAPTER VI
CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Tobacco is the second major cause of the death and it is the fourth most common risk factor for disease in the world. The global community concerns over the implications of smoking related diseases as the single most preventable cause of premature deaths, and also one of the world top causes for disease burden of a country, especially the developing countries, has lead to many collaborated efforts at the international and national levels aiming at reducing cigarette smoking. The world Health Organization has been the leading international body on the formulation of global anti-smoking programmes, of which Myanmar has been recognized as being one country that has been able to successfully achieved most of these goals.

The results in this research were the frequency and percentage distribution of smoking behavior and related factors: socio-demographic factors, accessibility of cigarettes, peer group influences, neighbor and family influences, advertisements influences and media influences. The objective of this study was to find out the smoking behaviors and factors related to smoking behaviors of 230 respondents including both males and females. The percentage of smoking in this population was 57.67 percent and the majority of smokers were male.

Most of the smokers were in the age range between 21 – 22 years. Among smokers, majority of them started to smoke at the age of 16 and the age range at which most students were smoking was between the early adolescent age group from 16 – 21.

According to the allowance per month, it showed that there was significant association towards allowance per month and smoking behavior. So, from this result it can be concluded that the student who got more money could spend it on buying cigarettes. The demographic factors of respondents according to the study didn't show any significant statistical association between smoking behavior and age, level of study, religion, and living style.

According to the findings of this study, the student's knowledge on smoking hazards did not have significant association with smoking of the study population. However, the attitude level of students towards smoking shows that there was significant association between attitude and smoking behavior.

Furthermore, this study discovered that respondents mentioned that their classmates, roommates, and close friends were influenced to smoke. An association was found between smoking behavior and peer groups influences. Peer group influences is still one of the most powerful influencing factors on smoking among students and it is a reinforcing factor that should not be undermined when preparing programmes directed at reducing smoking among students.

In this study, the one who felt easy to buy cigarette at local shops near home (42.41 %) had more proportion to smoke than the one who felt easy to buy it from street vendors (29.32 %) and local shops around university (39.82 %). However, there was no significant association between place to buy cigarette and smoking behavior.

The study showed that 60.69 percent of the students who neighbors had influences on frequency of smoke smoked, while 26.56 percent of the students who those did not have influences on frequency of smoke smoked. There was significant association between neighbors frequency influence and smoking behavior.

Regarding to the association between type of advertisement influences and smoking behavior, the students who exposed to moderate of cigarettes advertisement smoked less than those who exposed low. However, the results showed that there was no significant association between cigarettes advertisement and smoking behavior.

6.2 Recommendation

6.2.1 Recommendation for Implementation

6.2.1.1. Recommendation for university

1. Peer group was very important influencing factor to smoking among students in this university. The selecting and training peer educators should develop trial and evaluate a peer education program for students. Involvement of non-smoking peer group should be included in university anti-smoking programs.

2. The university management team should strictly consider the current university regulations on cigarette smoking by students. The university management team also should not allow smoking in the university and should be used posters, billboards for banning of smoking.

3. Concerning the findings of this study about attitude on smoking behavior in the target population, the university management team should be intensified health education on anti-smoking programs in university in order to successfully accomplish better results and students have the positive attitude toward smoking hazards.

4. Local shops near university, and occupied by university also should be banned selling cigarettes because of the students mentioned that they can easily buy the cigarettes from local shops near university.

6.2.1.2 Recommendation for government

1. Ministry of Health should be integrated national health education programs on the health effects of smoking in the university curriculum. Nicotine dependence and hazardous substance of cigarette need to be emphasized to discourage students trying on and to continue smoking.

2. A tobacco-free environment at the university and in community in order to prevent students from smoking, or children from taking up smoking and or becoming new smokers. Health promotion programs should also be included activities to improve appropriative perception, life skills that are essential for them to refrain risky behaviors such as smoking.

3. Ministry of Health in collaboration with the Ministry of Education, and Ministry of Information should be increased health promotion on anti-smoking campaigns. It is necessary to review the status of law enforcement involving sale of tobacco products to underage youths, smoking in the public places and educational institution.

6.2.4 Recommendation for further study

1. A qualitative research should be conducted on the smokers group to further explore reasons for being smokers, and how to quit cigarette smoking. To find out more detail information results about smokers group and focus group discussion would be required to get better results.

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APPENDIX

QUESTIONNAIRES

SMOKING BEHAVIOR OF UNIVERSITY OF FORESTRY STUDENTS IN YEZIN, PYINMANA CITY, MYANMAR

Date of registration ___/___/____ Registration No. ____/____/_____

Instruction: The purpose of this questionnaire is to collect information that will be later analysis and I ask you to give your best answers freely and correctly☑ in the spaces or boxes provided. All the information obtained in this questionnaire will be kept confidential and each subject was be treat anonymously.

Part 1 Socio-Demographic Factors

Please write an appropriate answer or put ✔ in the appropriate box ❑.

1. How old are you? …… years old

2. What is your sex?

❑1.Male ❑2.Female

3. Which year do you study in?

❑1st Year ❑2nd Year ❑3rd Year

4. What is your religion?

❑Buddhism ❑Christian

❑Muslim ❑Others (specify)…….

5. What is your type of accommodation during studying in this University?

❑1. Owned house with parents ❑4.Rental house/ apartment

❑2. Living in relative's house ❑5.Others (specify)……

❑3. University dormitory

6. What is your allowance per month? ……Kyat.

Knowledge about smoking

Please put ✔ in the appropriate box ❑.

7. What are the hazardous substances from cigarette smoking?

❑1.Nicotine and codeine

❑2.Nicotine and carbon monoxide

❑3.Morphine and codeine

❑4.Morphine and carbon monoxide

8. What is the addictive substance in cigarette?

❑1.Nicotine

❑2.Carbon monoxide

❑3.Tar

❑4.Caffein

9. Which one of these diseases has the highest death rate among smokers?

❑1.Lung cancer

❑2.Pulmonary Tuberculosis

❑3.Heart disease

❑4.Larynx cancer

10. Which disease is not associated with cigarette smoking?

❑1.Esophagus cancer

❑2.Heart disease

❑3.Emphysema

❑4.Tuberculosis

11. What is the effect of cigarette smoking on fetus in pregnant mother who smoke?

❑1.Deformities of legs and arms

❑2.Low growth rate

❑3.Pulmonary tuberculosis

❑4.Without any effect

12. Among maternal smoking group, which substance can penetrate through breast feeding from mother to her infant?

❑1.Nicotine

❑2.Carbon monoxide

❑3.Tar

❑4.Ammonia

13. What is the effect of cigarette on nervous system?

❑1.Stimulate nervous system

❑2.Stimulate nervous system first and suppress nervous later

❑3.Suppress nervous system

❑4.Does not stimulate and suppress

14. If one of family member smoke cigarette, can other family member receive hazardous substance from his/her smoking?

❑1.Without any effect

❑2.Effect on pregnant woman only

❑3Effect on small children only

❑4.Effect on all family members

15. What is not the side effect of the smoking?

❑1.Having bad breath

❑2.Teeth changes color

❑3.Hair falling off

❑4.Cough

16. Which choice is incorrect?

❑1.Nicotin is not severe for the second hand smoker

❑2.Tar is the cause of cancer

❑3.The smoker will have high blood pressure

❑4.The cigarette containing low tar and nicotine is not quite good for health?

Attitude toward smoking

Please tick✔ your best answer for the following statement.

Statements		Strongly agree	Agree	Not sure	Disagree	Strongly disagree
17.	Smoking makes you feel stronger.					
18.	Smoking can relieve your tension and anxiety.					
19.	Smoking can help you feel more confidence.					
20.	Occasional smoking does not cause any harm.					
21.	People who are smoking will feel like a real man.					
22.	Female who smoke feel so proud.					
23.	Teenagers who are smoking will feel they are adults.					
24.	University should not have any regulation about smoking.					
25.	It is easy to quit smoking.					
26.	Smoking in public area does not harm other people.					

Part 2 Enabling Factors

Please put ✔ in the appropriate box ❑.

Accessibility of cigarette

27. Can you easily buy a cigarette from a shop in the University?

❑1.Yes

❑2. No

28. Where can you easily buy the cigarettes? (Can answer more than one)

❑1.Local shops near home ❑3.Local shops around University

❑2.Street Vendors ❑4.Others (specify)……..

29. If you cannot buy the cigarette, how do you get it?

❑1.From my parent's ❑2.From my friend at University

❑3.From my friend near home ❑4.From other friends

❑5.Never want to get it ❑6.Others (specify)……

30. Is the cost of buying a pack of cigarette cheap?

❑1.Yes

❑2.No

Part 3 Reinforcing Factors

Please put ✔ in the appropriate box ❑.

Influence from Advertisements

31. Do you think, cigarette advertisements do have many effects on smoking behavior?

❑1.Yes ❑2.No

32. Do you think, smoking advertisement does not play an important role in smoking among students?

❑1.Yes ❑2.No

33. Do you think, smoking advertisements should be totally banned?

❑1.Yes ❑2.No

34. Do you think, if cigarette advertisements were banned, smoking behavior will be reduced?

❑1.Yes ❑2.No

35. Do you think, smoking advertisement is bad for young children?

❑1.Yes ❑2.No

36. What kind of advertisement influence on smoking? (Multiple answer)

❑1. Popular brand

❑2. Famous people

❑3. Repetition of advertisement

❑4. Others (specify)……..

37. What kind of media influences smoking? (Multiple answer)

❑1. Drama in T.V

❑2. Newspaper/ Magazines

❑3. Internet

❑4. Others (specify)……

Influence from peer group

38. Do you think, your classmate influence you to smoke?

❑1. Yes ❑ 2.No

39. Do you think, your roommate influence you to smoke?

❑1. Yes ❑2.No

40. Do you think, your closed friend influence you to smoke?

❑1. Yes ❑2.No

41. Do you think, your classmate influences the frequency of smoking?

❑1. Yes ❑2.No

42. Do you think, your roommate influences the frequency of smoking?

❑1. Yes ❑2.No

43. Do you think, your closed friend influences the frequency of smoking?

❑1. Yes ❑2.No

Influence from family and neighbors

44. Do you think, your father/mother influence you to smoke?

❑1. Yes ❑ 2.No

45. Do you think, your relative influence you to smoke?

❑1. Yes ❑2.No

46. Do you think, your neighbors influence you smoke?

❑1. Yes ❑2.No

47. Do you think, your father/mother influences the frequency of smoking?

❑1. Yes ❑2.No

48. Do you think, your relative influences the frequency of smoking?

❑1. Yes ❑2.No

49. Do you think, your neighbors influence the frequency of smoking?

❑1. Yes ❑2.No

Part 4 Smoking Behavior

50. Do you smoke?

❑1. No, I have never smoked in my life. (Stop here)(Thank you for your participation)

❑2. No, but I used to smoke and now I completely quit. (Stop here)(Thank you for your participation)

❑3.Yes, I currently smoke.

51. How often do you smoke?

❑1. Everyday

❑2. 4 to 6 days a week

❑3.1 to 3 days a week

52. When do you like to smoke most?

❑1.After meal

❑2.After wake up in the morning

❑3.When you are stay with your smoking friends

❑4.Others (specify)…….

53. Which brand do you prefer?

❑1.Local

❑2.Foreign (please write the name of brand)

❑3.Both

54. How many cigarettes do you smoke in a day?.....Cigarette/Day?

55. How much do you spend on cigarette (average)? ……Kyat/day

56. At what age did you first smoke cigarette?.....years

BIOGRAPHY

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DATE OF BIRTH	February 13, 1981
PLACE OF BIRTH	Loikaw, Myanmar
INSTITUTION ATTENDED	University of Medical Technology, Myanmar, 2000- 2004 Bachelor of Medical Technology ASEAN Institute for Health Development Mahidol University, Thailand, 2009-2010 Master of Primary Health Care Management
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