

**Tobacco Use among Adolescent Students in Secondary
Schools of Pokhara Sub Metropolitan City of Nepal**

Submitted to

**Department of Community Medicine and Family Health
Maharajgunj Campus, Institute of Medicine
Tribhuvan University
Kathmandu**

For the partial fulfilment of the Masters degree in Public Health (MPH)

Submitted by

Deepak Paudel

April, 2003

Approval Sheet

This is to certify that Mr. Deepak Paudel has prepared this thesis entitled "**Tobacco Use Among Adolescent Students in Secondary Schools of Pokhara Sub Metropolitan City of Nepal**" under our guidance and supervision.

This thesis is prepared as partial fulfilment of the requirement for the Masters degree in Public Health (MPH) from Tribhuvan University, Nepal. This thesis has been accepted and recommended for final approval.

Date: -----

Mr. Ramjee Prasad Pathak
Research Supervisor and MPH Coordinator
Associate Professor
Department of Community Medicine and Family Health
Maharajgunj Campus, Institute of Medicine
Tribhuvan University, Kathmandu, Nepal

Date: -----

Prof. Dr. Bimala Shrestha
Head
Department of Community Medicine and Family Health
Maharajgunj Campus, Institute of Medicine
Tribhuvan University, Kathmandu, Nepal

This thesis has been approved [] not approved []

(Internal Examiner)

(External Examiner)

Date: -----

Date: -----

Examination Controller Division
TU, Institute of Medicine, Maharajgunj

Acknowledgements

I am grateful to Professor Dr. Bimala Shrestha, Head of the Department of Community Medicine and Family Health, Research Committee members and all the faculty members for their encouragement, support and guidance to conduct this study.

My deepest gratitude goes to my supervisor and MPH Programme coordinator, Mr. Ramjee Prasad Pathak for his continued guidance, encouragement, motivation and support at each step of the study. His regular and extensive guidance and encouragement are main source of inspiration to accomplish this study successfully.

I am very much grateful to Professor Dr. Dev Narayan Shah, Campus Chief, Maharajgunj Campus for his inspiration and Professor Ishwar Bahadur Shrestha and Professor Chitra Kumar Gurung for their kind guidance and help in understanding the research process and statistical concepts. I would also like to thank Mr. Sameer KC for his help in statistical analysis.

This work was carried out with the aid of a grant from Research for International Tobacco Control (RITC), an international secretariat housed at the International Development Research Centre, Ottawa, Canada. I wish to thank RITC/IDRC for providing the grant and Ms. Rosemary Kennedy, Coordinator, RITC/IDRC for her valuable inputs and suggestions.

I would like to thank Dr. Tugrul Erbaydar, Asst. Professor, Marmara University, Turkey and many other individuals for providing valuable suggestions and relevant literatures through email.

My special thanks are due to Ms. Anjali Joshi for her encouragement and great support during data collection. I would also like to thank Mr. Rajesh Khanal and my beloved brother Shatish Paudel for their help in data entry and analysis. My colleagues: Dhirjung Shah, Nur Pant, Ram Bilas Yadav, Shiv Datt Bhatt, Wakil Jha and Yogendra Bhagat are also thanked for their encouragement and help during field work, data analysis and report writing. Sincere thanks are extended to my parents for their support and good wishes to make this study a success.

I would like to express my sincere thanks to all students, the authorities of sampled schools (*list annexed*) of Pokhara and District Education Office, Kaski for their participation with keen interest in the study. This study may not be possible without their help and cooperation.

Deepak Paudel

Summary

Tobacco use is one of the chief preventable causes of death and illness in the world. Presently, about four million people worldwide die yearly from tobacco related diseases i.e. one death every eight seconds. If current trends continue, there will be one death every three seconds by 2030 and a third of them in developing countries.

The objective of the study was to determine the magnitude of tobacco use (*both smoked and smokeless tobacco products*) among adolescent high-school students in Pokhara sub metropolitan city in Nepal, and to identify the factors that influence their decision to initiate tobacco use.

The study was a cross-sectional descriptive survey among school adolescents of grades 8, 9 and 10 of Pokhara sub metropolitan city. Multi stage random sampling (*probability proportional to enrolment size method for schools and random method for class within selected schools*) was applied. Data collection was carried out during January 5-26, 2003 by using anonymous self-administered questionnaire. The sample size of the study was 2032 (School response rate=100%, students response rate=96.8%). Informed verbal consent was obtained from the school authority and students. Proportion with confidence interval was calculated and logistics regression analysis was performed for data analysis.

Nearly half (47.1%) of the adolescent students ever used tobacco products. One in seven (13.2%) were current (*either regular or occasional*) users, one in four (22.7%) were experimental users (*i.e. used any tobacco products not more than 10 times*) and one in ten (10.6%) were past users of any tobacco product. Use of *pan masala, gutkha* was more common (41.2%) followed by cigarette (14.7%) and surti (3.0%). The mean age of initiating tobacco was about 13 years and nearly one fifth (18.9%) initiated before 10 years of age. Boys were 3.15 times as likely to use tobacco as compared to girls. Similarly, adolescent students of non-governmental schools were 2.58 times as likely to use tobacco as compared to governmental schools students. Adolescent students from Gurung/Magar family were more likely to use tobacco as compared to those from Brahmin/Chhetri family.

About seven in ten (71.0%) adolescent students were living in the family where at least one member uses tobacco. A substantial proportion (43.9%) of adolescent students reported that at

least one of their four best friends use tobacco. Adolescent students from the family with at least one senior family member using tobacco were 1.79 times as likely to use tobacco as compared to those from the family with not any member using tobacco. Similarly, adolescent students with at least one of the four best friend using tobacco were 5.93 times as likely to use tobacco as compared to those with none of the best friend using tobacco. If both the family members and friends use tobacco, the adolescent students were 8.93 times as likely to use tobacco as those with none of the friends and family members using tobacco.

Nearly one-third (31.0%) of the adolescent students were having good knowledge and less than half (42.7%) were having some knowledge about the hazards of tobacco use. Significant proportion of adolescents have wrong perceptions about the use of tobacco i.e. 47% thought that tobacco users have more friend and 27.3% thought that tobacco users are more attractive. But the student's use of tobacco was not significantly associated with their level of knowledge and perceptions towards tobacco use.

About one third (32.3%) of adolescent students were exposed to pro-tobacco advertisements. Adolescent students exposed to pro-tobacco advertisements were 1.32 times as likely to use tobacco as compared to those who were not exposed. Nearly three of five (58.3%) of adolescent students were exposed to environmental tobacco smoke at home and about four of five (83.3%) were exposed to environmental tobacco smoke at public places. Adolescent students exposed regularly to environmental tobacco smoke at home were 1.46 times as likely to use tobacco and those exposed regularly to environmental tobacco smoke at public places were 2.69 times more likely to use tobacco than those who were never exposed.

The study revealed that the use of tobacco among adolescents was significantly associated with tobacco use habit of family members and friends, their exposure to pro-tobacco advertisement and environmental tobacco smoke. Level of knowledge regarding hazards of tobacco and perception were insignificant with the tobacco use habit of adolescents. Thus, educational and counselling program for preventing non-users from using tobacco and for helping current and experimental users to quit tobacco use is necessary. Adolescent students should be protected from exposure to tobacco use habit of family members and friends. Complete ban in pro-tobacco advertisements and restriction in the use of tobacco in public places should also be imposed.

Abbreviation and Glossary

AIDS	Acquired Immuno Deficiency Syndrome
CDC	Centers for Disease Control
CDR	Central Development Region
COPD	Chronic Obstructive Pulmonary Disease
DALY	Disability Adjusted Life Years
ETS	Environmental Tobacco Smoke
FHD	Family Health Division
GYTS	Global Youth Tobacco Survey
HIV	Human Immunodeficiency Virus
MOH	Ministry of Health
PPE	Probability Proportional to Enrolment size
PRECEDE	Predisposing, Reinforcing and Enabling Cues for Educational Diagnosis, Planning and Evaluation
SEAR	South East Asia Region
SPSS	Statistical Package for Social Sciences
STD	Sexually Transmitted Disease
TFI	Tobacco Free Initiative
WHO	World Health Organization
<i>Bidi</i>	Indigenous hand rolled tobacco in Indian Sub continent
<i>Gutkha</i>	Mixture of tobacco and molasses
<i>Pan masala</i>	Commercial preparation of areca nut generally with powdered tobacco
<i>Surti</i>	Dried tobacco leaf for chewing
<i>Khaini</i>	Chewing tobacco mixed with other ingredients like lime and added flavour

Contents

Approval Sheet	i
Acknowledgements.....	ii
Summary	iii
Abbreviation and Glossary.....	v
Tables	viii
Figures	ix
Chapter I Introduction	1
1.1 Background	1
1.2 Statement of the problem	3
1.3 Rationale of the study	4
1.4 Objectives	5
1.5 Research question	6
1.6 Variables	6
1.7 Conceptual framework.....	7
1.8 Operational definition of variables.....	8
Chapter II Literature review	10
2.1 Global trends	10
2.2 Tobacco use trends in Nepal	11
2.3 Health implications of tobacco use	12
2.4 Tobacco use pattern of youths	13
Chapter III Methodology	16
3.1 Study design.....	16
3.2 Study population	16
3.3 Sampling	16
3.4 Data collection method	18
3.5 Instrumentation	18
3.6 Validity and reliability	18
3.7 Ethical consideration.....	19
3.8 Data management and analysis	19
3.9 Exclusion criteria	19
3.10 Limitations	19

Chapter IV Results	20
4.1 General characteristics of study population.....	21
4.2 Findings	22
4.2.1 <i>Prevalence of tobacco use</i>	22
4.2.2 <i>Initiation of tobacco use</i>	23
4.2.3 <i>Tobacco use habit of family members and friends</i>	24
4.2.4 <i>Knowledge about hazards of tobacco use</i>	26
4.2.5 <i>Perceptions towards tobacco use</i>	28
4.2.6 <i>Exposure to pro-tobacco advertisements</i>	31
4.2.7 <i>Environmental tobacco smoke</i>	32
4.3 Results from logistic regression analysis.....	35
 Chapter V Discussion.....	 39
5.1 Prevalence of tobacco use	39
5.2 Age of initiating tobacco use.....	41
5.3 Tobacco use habit of family members and friends.....	42
5.4 Knowledge regarding the hazards of tobacco use	43
5.5 Perceptions regarding tobacco use	44
5.6 Exposure to pro-tobacco advertisement	44
5.7 Exposure to Environmental Tobacco Smoke	46
 Chapter VI Conclusions and Recommendations	 47
 Chapter VII References	 49
 Annexes	
 Annex 1: Questionnaire	 52
Annex 2: Consent form	56
Annex 3: List of sampled schools	57

Tables

Table No.	Title	Page No.
Table 1:	Response rate for some study variables	20
Table 2:	General characteristics of study population	21
Table 3:	Prevalence of ever tobacco use by type of tobacco product	22
Table 4:	Proportion of adolescent students using tobacco by frequency of use.....	23
Table 5:	Proportion of adolescent students initiating tobacco before 10 years of age and the average age of initiating tobacco.....	24
Table 6:	Proportion of adolescent students by the tobacco use habit of family members and friends.....	25
Table 7:	Proportion of adolescent students using tobacco by the tobacco use habit of family members	25
Table 8:	Proportion of adolescent students using tobacco by the tobacco use habit of friends	26
Table 9:	Proportion of adolescent students by level of knowledge about hazards of tobacco use .	27
Table 10:	Proportion of adolescent students using tobacco by their level of knowledge about hazards of tobacco	28
Table 11:	Proportion of adolescent students using tobacco by level of agreement on the statement that "tobacco users have more friend"	30
Table 12:	Proportion of adolescent students using tobacco by level of agreement on the statement that "tobacco users are more attractive"	30
Table 13:	Proportion of adolescent students by their exposure to pro-tobacco advertisements	31
Table 14:	Proportion of adolescent students using tobacco by their exposure to pro-tobacco advertisements	32
Table 15:	Proportion of adolescent students by their exposure to environmental tobacco smoke at home	32
Table 16:	Proportion of adolescent students by their exposure to environmental tobacco smoke at public places	33
Table 17:	Predictors of ever tobacco use by general characteristics of respondents (logistic regression analysis)	35
Table 18:	Predictors of ever tobacco use by knowledge about hazards and perceptions towards tobacco use (logistic regression analysis)	36
Table 19:	Predictors of ever tobacco use by tobacco use habit of family members and friends (logistic regression analysis)	37
Table 20:	Predictors of ever tobacco use by pro-tobacco advertisements and environmental tobacco smoke (logistic regression analysis)	38

Figures

Figure No.	Title	Page No.
Figure 1:	Age of initiating tobacco use by sex	24
Figure 2:	Proportion of adolescent students having different level of agreement on the statement that "tobacco users have more friends"	29
Figure 3:	Proportion of adolescent students having different level of agreement on the statement that tobacco users are more attractive	29
Figure 4:	Proportion of adolescent students using tobacco by their level of exposure to Environmental Tobacco Smoke at home and at public places.....	34

Chapter I

1. Introduction

1.1 Background

In Nepal, adolescents comprise more than one fifth (22%) of the total population, a proportion that is expected to grow over the years to come due to a high fertility rate.¹ Adolescence is the period of physical, psychological and social maturation from childhood to adulthood. The term "adolescent" refers to individuals between the ages of 10-19 years. There is growing recognition that because of a combination of biological, psychological and social factors, adolescents face many challenges and health risks such as unprotected sex, substance abuse, accidents and violence. The health of adolescents is profoundly associated with their behaviour and development process. Healthy development of adolescents depends upon several complex factors: their socio-economic circumstances; the environment in which they live and grow; the quality of their family, community and peer relationships; and available opportunities for education and access to health information and services. The young people of today are tomorrow's adults. The behaviour of adolescents is a potential determining factor for characteristics and behaviour of our adults in the future. It is of paramount importance that an environment be created and adequate support provided to enable adolescents to develop to their full potential and enjoy a healthy and responsible adulthood.

Tobacco is a plant grown for its leaves, which are smoked, chewed or sniffed for a variety of effects. It is an addictive substance as it contains nicotine. In addition to nicotine, tobacco contains over 23 known carcinogens and more than 4,000 chemicals.^{2,3} Tobacco use is a major worldwide public health problem. It is now by far the largest preventable cause of death in the world. Although there is a health warning on every packet of cigarettes in Nepal indicating that smoking is injurious to health, these warnings are illegibly printed. On the other hand, attractive and catchy tobacco advertisements are very common. Thus, the use of tobacco products including cigarettes is increasing in the country.

Tobacco use is one of the greatest burdens to the health and well being of women and girls around the world. At present, tobacco kills more than half a million women per year worldwide. However, by the year 2020, it is estimated that the global yearly death toll will double. In several

countries, lung cancer has already surpassed breast cancer as the leading cause of cancer deaths among women.⁴

"The tobacco epidemic is an epidemic like no other. It is impossible to blame a biological pathogen – a virus, bacillus or bacterium. And neither ignorance nor the surprise effect provides an explanation. The epidemic, or more correctly pandemic, is sustained only by the search for financial gain" says Dr. Hiroshi Nakajima, Former Director General, WHO.⁵

The current global trends indicate that the use of tobacco is declining in developed countries as control measures take effect. Thus tobacco companies are stepping up marketing in developing countries. As a result, the use of tobacco is increasing especially among adolescents of developing countries. Ignorance about the negative health effects of tobacco use, big budget allocation for promotional activities by tobacco companies and glamour attached to smoking in the media and in advertisements has further exacerbated the problem. Tobacco is unquestionably the substance responsible for the most persistent and most widespread drug dependence, far ahead of alcohol, marijuana, heroin and cocaine.⁵ More alarming is the exponential rise in tobacco consumption and the corresponding deaths, with age, income and gender being no barrier.⁵

Tobacco and alcohol are the most widely used addictive substances in the world and both have serious public health consequences. Use of tobacco is extremely common throughout the world and most of its use is in the form of cigarettes. The World Bank estimates that in high-income countries, smoking-related health care accounts for 6-15.1% of all annual health care costs.⁶ The high smoking-related health care costs are particularly worrisome for low-income countries that can least afford the health care burden, where the tobacco epidemic is expected to account for 70% of all tobacco-related deaths in the next 20 to 30 years.

The overwhelming majority of smokers begin using tobacco before they reach adulthood. Among those young people who smoke, nearly one quarter smoke their first cigarette before they reached the age of ten.⁷ Several factors increase the risk of youth smoking. These include tobacco advertisement and promotion, easy access to tobacco products, and low prices.⁷

1.2 Statement of the problem

Tobacco use is the chief preventable cause of death and illness in the world. Most people begin using tobacco before the age of 18. Recent trends indicate that the smoking prevalence rate among adolescents is rising and age of initiation is becoming younger.⁸ If these patterns continue, tobacco use will result in the deaths of 250 million children and young people alive today, a third of whom live in developing countries.⁹

Major consequences of smoking are not manifested until three to four decades after the onset of persistent smoking. Approximately 50% of men in developing countries are smokers and cigarette consumption is steadily rising in these countries, particularly among women and youth. Tobacco use is predicted to be one of the major causes of death and disability-adjusted life years (DALYs) in the 21st century.

Smokers who have taken up the habit in adolescence and continue to smoke regularly have a 50% chance of dying from tobacco-related disease. Half of those persons will die in middle age, thereby losing nearly 22 years of normal life expectancy. With prolonged smoking, smokers have a death rate about three times higher than non-smokers at all ages, starting from young adulthood.¹⁰

Presently, about four million people worldwide die yearly from tobacco-related diseases, i.e., one death every eight seconds. If current trends continue, there will be one death every three seconds by 2030.¹¹

As tobacco use in developed countries is decreasing, multinational tobacco companies are targeting youths of developing countries through different promotional activities and advertisements. Use of non-smoking tobacco products is increasing in Nepal, as tobacco control programs are very limited and focused only on tobacco products that are smoked.

Tobacco use and other high-risk behaviours are emerging as significant problems in our society. The unhealthy behaviours acquired during adolescence are continued throughout the life cycle, resulting in adverse effects on the individual, family and society. Therefore, adolescents and school-aged children should be a primary focus for intervention strategies for promoting healthy behaviours.

1.3 Rationale of the study

Tobacco use is an unhealthy behaviour that remains remarkably resistant to modification. It is a widespread health problem and the health hazards associated with it are undeniable. Still it remains a most difficult behaviour to change.⁹ Presently, no other consumer product is as dangerous or kills as many people as tobacco. Tobacco kills more people each year around the world than AIDS, drug abuse, road traffic accidents, murders and suicide combined.⁷

It is unlikely that individuals who avoid starting to smoke in adolescence or young adulthood will ever become smokers. Nowadays, the overwhelming majority of smokers start before age 25, often in childhood or adolescence in middle-income and low-income countries for which data are available, it appears that most smokers start by the early twenties, but the trend is toward younger age.²⁹ Teenagers begin to smoke without realizing the addictive nature of nicotine. The continuum of smoking behaviours among young people evolves in stages from preparation to experimentation, to regular smoking and finally to nicotine addiction. In many instances, adolescents progress from their first experimental cigarette to strong nicotine dependence in a year or less. Once a teenager realizes the extent of his/her addiction, usually it is too late to quit due to physical and psychological dependence.¹⁰

High-risk behaviours are not only more prevalent, but also result in more serious complications to adolescents than adults. In this context, protecting every adolescent from initiating tobacco use is the best intervention for the promotion of the health status of our nation. Thus, this study aims to estimate the level of tobacco use among school-going adolescents and also identify the factors that influence youth to use tobacco. Identification of the factors responsible for initiating tobacco use among adolescents will be useful for identifying the most effective interventions to prevent youths from taking up the tobacco habit.

This research supplements previous research that was conducted through the Global Youth Tobacco Survey (GYTS) in the Central Development Region of Nepal and also provides the opportunity to compare results of different geographical and ethnic areas in Nepal. In addition, the influence of the media, peer groups, and family on the students' decisions to initiate tobacco use, their level of knowledge about hazards of tobacco use, their perceptions regarding tobacco use, and their level of exposure to environmental tobacco smoke are also explored in this study.

1.4 Objectives

1.4.1 General Objective

The general objective of the study was to determine the magnitude of tobacco use (both smoked and smokeless tobacco products) among adolescent high-school students in Pokhara sub metropolitan city in Nepal, and to identify the factors that influence their decisions about whether to initiate tobacco use.

1.4.2 Specific Objective

The specific objectives of the study were to:

- determine the prevalence and type of tobacco use among adolescent students in grades 8, 9 and 10 in Pokhara sub metropolitan city
- determine the age at which these students initiated tobacco use
- establish the association of tobacco use by the students with that of their family members and friends
- determine the students' perceptions regarding tobacco use
- determine the students' level of exposure to pro-tobacco advertisements in the media
- determine the students' level of exposure to environmental tobacco smoke

1.5 Research questions

Following were the research questions of this study:

1. Does tobacco use by family members and/or friends influence adolescent students to use tobacco?
2. Does exposure to pro-tobacco advertisements and environmental tobacco smoke influence adolescent students to use tobacco?
3. Does knowledge about health hazards of tobacco and perception towards tobacco use influence adolescent students to use tobacco?

1.6 Variables

Independent

Tobacco use of family members

Tobacco use of friends

Knowledge regarding harmful effects of tobacco use

Perceptions regarding tobacco use

Exposure to pro-tobacco advertisements

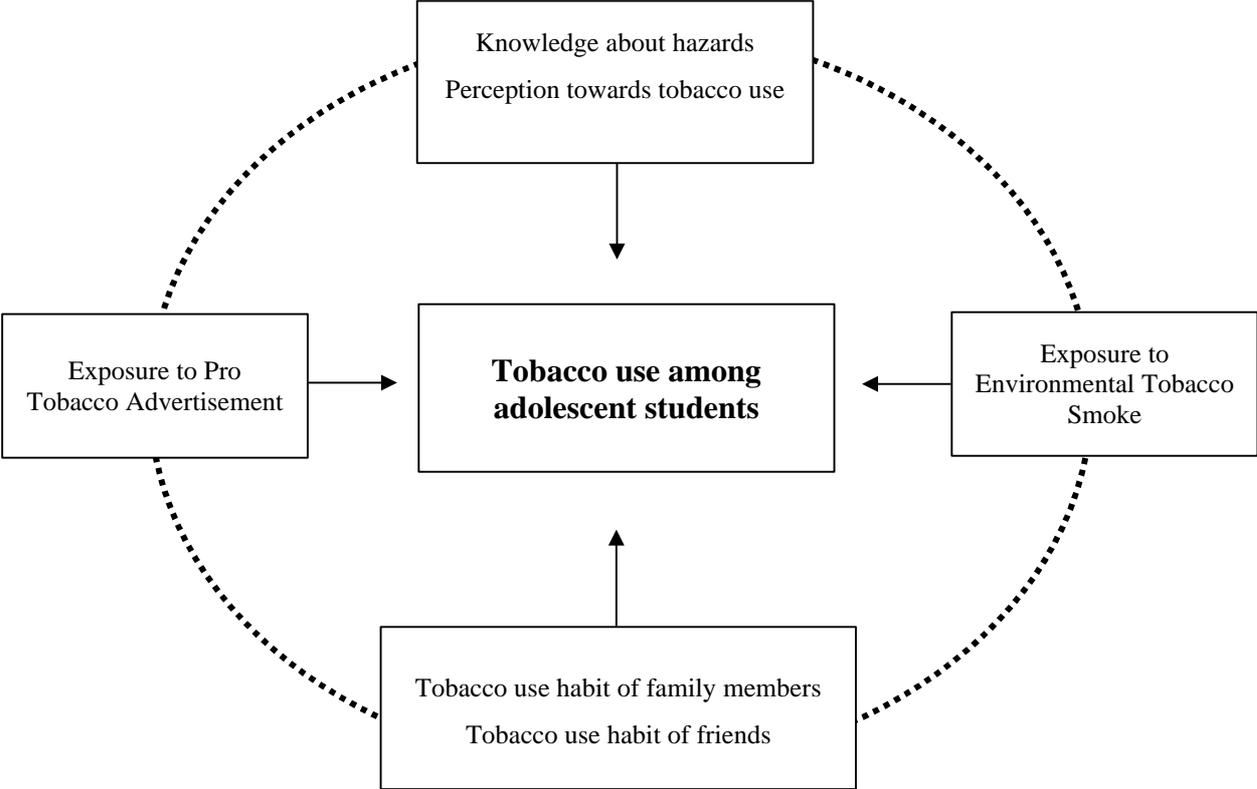
Exposure to environmental tobacco smoke

Dependent

Tobacco use among adolescent students

1.7 Conceptual framework

Although tobacco use is an individual behaviour, it is greatly influenced by social and environmental factors. Knowledge regarding the health hazards of tobacco use, perceptions towards tobacco use, tobacco use behaviour of family members and friends, and exposure to pro-tobacco advertisements and environmental tobacco smoke, are some of the factors that influence youth to use tobacco.



1.8 Operational definition of variables

For the purpose of this study, the following operational definitions of the variables were used.

Tobacco use is the use of cigarettes, *bidi*, *surti*, *khaini*, *pan masala* and *gutkha* in smoking, chewing or sniffing form even once.

Regular user is someone who, at the time of the survey, consumed/used any tobacco product at least once a day (people who consumed every day, but not on the days of religious fasting were still classified as regular users).

Occasional user is someone who consumed any tobacco product at least once a week but not everyday.

Experimental user is someone who had consumed any tobacco product at any time, but not more than 10 units of tobacco product (e.g. 10 sticks of cigarettes or 10 packet of *gutkha*) or equivalent amount of tobacco.

Past user is someone who was formerly (i) regular user, or (ii) occasional user and used more than 10 units of tobacco product (e.g. 10 sticks of cigarettes or 10 packet of *gutkha*) but currently do not consume tobacco at all.

Never-user is a person who had never used any tobacco product as of the day of completing the questionnaire.

[For simplification in the comparative analysis, adolescent students were classified into "**ever user**" and "**never user**". Ever user includes all regular users, occasional users, experimental users and past users. Never user is one who has never used any tobacco product. Among ever users, the term "current user" was used to denote those who are either regular or occasional users.]

Adolescent student

Adolescent student is defined as the secondary school students of grade 8, 9 & 10 of both governmental and non-governmental schools within the age range of 10-19 years from Pokhara sub metropolitan city.

Knowledge regarding harmful effects of tobacco use

Good knowledge

Adolescent student who could report at least two major health hazards/illness among i) shortness of breath and/or asthma, ii) heart problems e.g. increased heart rate and/or heart attacks, iii) lung and/or other cancers, iv) chronic bronchitis and/or COPD.

Some knowledge

Adolescent student who could report at least one major health hazards/illness among i) shortness of breath and/or asthma, ii) heart problems e.g. increased heart rate and/or heart attacks, iii) lung and/or other cancers, iv) chronic bronchitis and/or COPD.

Poor knowledge

Adolescent student who could not report any major health hazards/illness among i) shortness of breath and/or asthma, ii) heart problems e.g. increased heart rate and/or heart attacks, iii) lung and/or other cancers, iv) chronic bronchitis and/or COPD.

Exposure to pro-tobacco advertisement

Adolescent student exposed to pro-tobacco advertisement is one who reports seeing pro-tobacco messages on billboards, or in newspapers or magazines, or in any electronic media (i.e. radio and television) or at sporting or other social events during last 30 days preceding the survey.

Exposure to environmental tobacco smoke

Adolescent student exposed to environmental tobacco smoke is one who reports being exposed to second hand smoke at home or in public places *e.g. public vehicle, park or other public areas* 30 days preceding the survey.

Perception towards tobacco use

The perception of the adolescent student was measured in the 5-point scale ranging from 'strongly agree' to 'strongly disagree' on the given statements. For simplification of analysis, 'strongly agree' and 'agree' were merged to '**agree**' and 'strongly disagree' and 'disagree' were merged to '**disagree**'. Finally, categories for analysis of perceptions were 'agree', 'can't say', 'disagree'. The statements given for measuring perceptions were:

- i) Adolescents who use tobacco have more friends
- ii) Adolescents who use tobacco are more attractive

Chapter II

2. Literature review

2.1 Global trends

Tobacco use is increasing at an alarming rate in the developing countries including Nepal. Tobacco was estimated to account for over 3 million annual deaths globally in 1990. Today, this figure has risen to about 4 million annual deaths, resulting in about 11,000 deaths everyday. Today, about one in three adults, or 1.2 billion people smoke worldwide. By 2025, the number is expected to rise to more than 1.6 billion. It is estimated that annual tobacco-attributable deaths will rise to 8.4 million by 2020 and will reach 10 million by 2030. This increase will not, however, be shared equally: by the year 2030, 70% of the tobacco-attributable deaths will occur in developing countries as deaths in developed regions are expected to rise 50% from 1.6 to 2.4 million, while those in Asia will soar almost fourfold from 1.1 million in 1990 to an estimated 4.2 million in 2020.^{6,11}

According to WHO (1999), nearly one out of five people on the planet smoke cigarettes, an estimated 800 million of these in developing countries. It is estimated that one third of the world's adult population, of whom 200 million are female, are smokers. Globally, 47% of men and 12% of women are smokers. The proportion of the population who are smokers varies in the developed and developing world and from country to country. In developing countries, 48% of men and 7% of women smoke, while in developed countries the corresponding percentages are 42% and 24%, respectively.¹⁰

Worldwide, tobacco consumption is estimated to be increasing by 2% a year, with the biggest rise occurring in the developing countries and Eastern Europe.¹² Between 1971 and 1991, the per capita consumption of cigarettes in developing countries increased by an average of 2.5% a year.¹² The growth of cigarette consumption was highest in the Western Pacific Region (3%), followed by the South East Asia Region (1.8%).

Young men are at highest risk for using any tobacco products but the incidence in girls and women is increasing. Worldwide, it is estimated that about 5.5 million people use smokeless tobacco daily and another 6 million use it at least weekly.¹² In the United States, smokeless

tobacco use is highest in the Southeast region, followed by the Central Plains and Western states. Its use is lowest in the Northeast region of the United States. Smokeless tobacco use patterns among Americans are higher within the following occupations: athletes, ranchers, farmers, fishermen, lumberjacks, and industrial workers who have repetitive jobs requiring hand freedom.

2.2 Tobacco use trends in Nepal

In Nepal, the overall tobacco use prevalence among adults (aged 15 and over) including products such as cigarettes, *bidi*, *hukka*, *sulpa*, rolled on tobacco, chewing tobacco (*khaini*, *pan masala*, *gutkha*, dry tobacco leaves etc.) is 44.7% and the prevalence of tobacco smoking is 38.4%. Smoking (*of cigarettes, bidi, hukka, sulpa*) was reported to be 5.5 times higher than the use of smokeless tobacco products like *khaini*, *pan masala*, *gutkha* etc. The use of tobacco products is almost twice as high among boys than among girls (58.1% and 31.6% respectively). Five percent of total respondents are using both smoked and smokeless tobacco products.¹³

According to a study on Tobacco Economics in Nepal by WHO/SEAR in 2000, the overall tobacco use prevalence is higher in rural areas (45.8%) than in the urban areas (34.4%) in the country. Among the three ecological regions, the overall tobacco use prevalence rate is highest in the high hills (68.2%), followed by the *Terai* (42.4%) and the low hills (40.9%). Tobacco use prevalence is higher among illiterate persons (55.2%) as compared to the literate population (36.1%). By gender, a much higher proportion of boys use tobacco (77.4% of illiterate boys and 49.4% of literate boys) than their girl counterparts (44.3% of illiterate girls and 12.5% of literate girls). Literacy appears to discourage the use of all types of tobacco products among both boys and girls in Nepal. Smoking prevalence among the literate is much lower (29.7%) than among the illiterate (49.1%) and this is true for users of smokeless tobacco products as well.¹³ In Nepal, 71.7% of women smoked in high hills while only 14.2% of women in urban Kathmandu are smokers.¹²

Smoking is associated with increased risk of lung and heart diseases and is also closely related to other behaviours risky to health, such as alcohol and drug use. According to the Nepal Demographic and Health Survey 2000, nearly three fourths of men smoke cigarettes, *bidis* or other tobacco. The percentage of men who smoke cigarettes/*bidis*/tobacco is 36.7% among the 15-19 age group and 87.4% among the 50-54 age group.¹⁴

2.3 Health implications of tobacco use

With prolonged smoking, smokers have a death rate about three times higher than non-smokers at all ages, starting from young adulthood. The global tobacco epidemic is predicted to prematurely claim the lives of some 250 million children and adolescents, a third of whom are in developing countries. Studies have shown that 75-80% of smokers do want to quit. One third have made serious attempts to give up the habit.¹⁰ The odds are that one in three smokers will die prematurely from smoking with an average loss of 20-25 years of life.¹²

Tobacco use is predicted to be one of the major causes of death and disability-adjusted life years (DALYs) in the next century. Smoking has been significantly associated with 25 causes of death. The major ones include a range of cancers, heart and respiratory disease. Smoking during pregnancy increases babies' risk of low birth weight and results in other perinatal complications that are particularly hazardous for women. Exposure to environmental tobacco smoke (ETS) can cause lung cancer in otherwise healthy non-smokers and has a particularly harmful impact on children's respiratory health.⁸

Several studies have established the role of tobacco smoking as a major risk factor for a number of diseases such as coronary heart disease, lung cancer, and chronic obstructive lung disease. It is well known that once the tobacco smoking habit has been established, it is difficult for consumers of tobacco either to reduce their level of consumption or to stop its use. If tobacco use starts at a young age, then the health hazards later in life are likely to be more serious.¹⁵

Tobacco and alcohol are being marketed increasingly in low and middle-income countries. Smokers of all ages have death rates two or three times higher than non-smokers. There were large increases in smoking in developing countries especially among boys over the last part of the 20th century. While overall prevalence of tobacco use has declined in some high-income countries, it is increasing in some low and middle-income countries, especially among vulnerable populations such as young people and women. Worldwide it is estimated that tobacco use causes about 8.8% of deaths (4.9 million) and 4.1% of DALYs (59.1 million).¹⁶

In addition to the social and behavioural factors associated with the onset of tobacco use, a clear dependence on nicotine is found in the majority of chronic smokers. This dependence prevents these individuals from giving up tobacco use and staying away from it. Yet research has shown

that smoking cessation greatly reduces the risk of tobacco-related diseases, thus most tobacco-related deaths are preventable by intensive cessation intervention. If only a small proportion of today's smokers were able to stop smoking, the long-term health and economic benefits would be immense.¹²

It is possible that one of the difficulties in dealing successfully with tobacco use is that it has been viewed almost entirely as a problem of the individual. Though an individual begins to use tobacco and becomes a regular user, this individual behaviour occurs in a social and cultural context. Tobacco use regularly occurs more or less frequently among certain groups in the population suggesting that the behaviour is neither random nor idiosyncratic.¹⁷

2.4 Tobacco use pattern of youths

Although adult tobacco use prevalence has decreased significantly in many developed countries over the past two decades, tobacco use among youth is rising in many of these countries. Likewise, tobacco use by youth in developing countries is on the rise, owing in large part to the marketing practices of the trans-national tobacco companies.

Most tobacco use starts during childhood and adolescence.⁹ Teenagers are therefore an appropriate focus group when considering the initiation of tobacco use. During the teen years, adolescents are attempting to disentangle from the influence of and identification with parents, establish stronger links with their peers and establish a sharper and more independent self-identity.

For many teenagers, smoking appears to constitute a 'rite of passage' into adulthood. Smoking helps teenagers feel more mature because smoking is an adult behaviour forbidden to children. Adolescents experiment with tobacco products to appear more mature.

For some youth, smoking is seen as a pleasurable, relaxing, and helpful behaviour. Cigarettes often are referred to as a dependable 'best friend' through both happy and difficult times. Cigarette smoking is perceived as a sociable behaviour. It is viewed as a way of establishing links with other people and of being 'one of the group'.¹⁷

Some studies have suggested that peer pressure and the smoking habits of parents and older siblings are major factors that influence the initiation of youth smoking.

With regard to peer influence, almost 90% of teenage smokers in the United States acknowledge that at least one of their four best friends smoke on a regular basis while only 33% of non-smokers have a best friend who is a smoker.

With regard to parental smoking, research suggests that parents who smoke are more likely to have children who smoke than non-smoking parents. For example, one study in the United States found that teenagers with two parents who smoke are more than twice as likely to smoke as those with no parents smoking.¹⁷ An interesting finding from a recent Turkish study was that both boys and girls were more likely to start smoking if their mother smoked than if their father smoked.¹⁸

With regard to older siblings, a study in the United States showed that a teenager with an older sibling who smokes is far more likely to become a smoker.¹⁷ The stability of the family unit and the smoking behaviour of family members continue to influence the teenager's smoking behaviour. Consistently, it has been found in the United States that the prevalence of teenage smoking is much lower in intact homes with both parents present. A study in the United States revealed that if both parents and an older sibling smoke, the chances of the teenager smoking are almost 1 in 5, in contrast to households where neither parent nor older siblings smoke, where the chances of the teenager being a smoker are less than 1 in 20.¹⁹

Several other factors have been identified as influencing the risk of youth using tobacco. These include tobacco industry advertising and promotion, easy access to tobacco products, and low prices. The recent Turkish study found that youths who were exposed to any type of cigarette advertisement were 1.19 times more likely to experiment and 1.18 times more likely to continue smoking than youth who were not exposed to advertising.¹⁵ Numerous studies in the published tobacco control literature have demonstrated conclusively that youth smoke more when the price of tobacco products is low.

One study found that the percentage of smokers among high school students in the US was higher among students who failed to participate in school activities other than sports (30.7% of the boys, 22.0% of the girls) than among those who participated in at least 1 such activity.²⁰

Among those who did participate, the lowest percentage of smokers was found among members of honour societies and among those who belonged to religious clubs. In the Turkish study, involvement in an extracurricular activity was not found to have an effect on experimentation with smoking by youth. However, among youth who were already established smokers, those not involved in an extracurricular activity were found to be 1.20 times more likely to *continue* smoking than those who were involved in an extracurricular activity.¹⁸

According to the GYTS in the Central region of Nepal, 11.6% (15.3% boys and 6.4% girls) of adolescent students currently use any tobacco product and 8.7% (12.0% boys and 3.8% girls) had ever smoked cigarettes. About forty percent of students are exposed to second hand smoke in their home and almost half in public places.^{21, 22, 23}

Although several research studies on tobacco use have been undertaken in different parts of Nepal, most of them have focused only on cigarette smoking. This is the first representative study in Nepal to ascertain the factors that influence adolescents' decisions to initiate tobacco use in addition to information on their use of different types of tobacco products.

Chapter III

3. Methodology

3.1 Study design

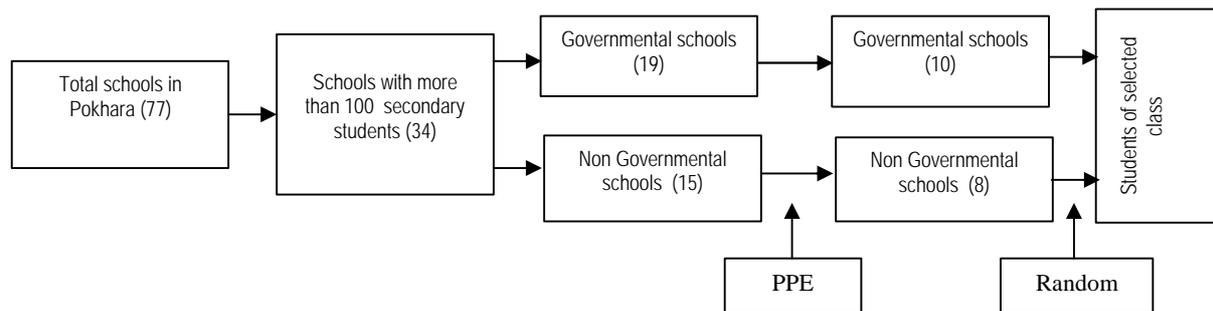
The framework of the study is based on the Global Youth Tobacco Survey (GYTS), designed and conducted by the World Health Organization (WHO) and Centers for Disease Control (CDC). This was a school-based cross-sectional descriptive study.

3.2 Study population

The study population was the adolescent students of grade 8, 9 and 10 from secondary schools within Pokhara sub metropolitan city.

3.3 Sampling

Multistage sampling was applied for the study. Schools with at least 100 secondary students (in grades 8, 9 and 10) were eligible for the study. Eligible schools were stratified into governmental and non-governmental categories. More than 50% of schools were selected on the basis of Probability Proportional to Enrolment size (PPE), i.e. the schools with high number of students are more likely to be selected than schools with low number of students. The sampling design of the study was as outlined below.



The list of governmental and non-governmental schools within Pokhara sub metropolitan city and the number of students studying in grade 8, 9 and 10 in those schools was obtained from the District Education Office, Kaski. Out of total 77 schools within metropolitan city, only 34 schools have more than 100 students in grades 8, 9 and 10. Those schools were selected as the sampling frame of the study and stratified into governmental (19) and non-governmental (15) schools. Ten out of nineteen governmental schools and eight out of fifteen non-governmental schools were selected on the basis of Probability Proportional to Student Enrolment size.

Population Survey or Descriptive Study Using Random (Not Cluster) Sampling*

Population Size	:	10,000
Expected Frequency	:	17.00 %
Worst Acceptable	:	18.70 %
Confidence Level		Sample Size
	-----	-----
80 %		742
90 %		1,167
95 %		1,579
99 %		2,447
99.9 %		3,458
99.99 %		4,250

Formula : Sample Size = $n / (1 - (n / \text{population}))$
 $n = Z * Z(P(1-P)) / (D * D)$

Reference : Kish & Leslie, Survey Sampling, John Wiley & Sons, NY, 1965

Note: Z=1.96, P=prevalence proportion, D=allowable error, n= sample size

*NB: Output result of sample size calculation using STATCALC of EPI Info 2000

The required number of sample size was 1579, based on the assumed prevalence rate of 17% and 10% allowable error. Thus, to obtain 1579 completed questionnaires, 1974 high school students (*assuming 80% response rate*) from 18 secondary schools were targeted for sample selection.

All selected schools agreed to participate in the study (school response rate=100%). As the required sample size was 1974 from 18 schools, the average number of samples to be selected from each school was 110. If the number of students in a class (combining all sections) was more than one hundred, any one class was randomly selected in the presence of the school authorities. As the number of students in those selected schools was not uniform (ranges from 100-718), class was chosen until a sample size of 100 was reached from each school. All students of selected classes were eligible for participation in the study.

A total of 2116 questionnaires were distributed to students and 2048 of them were filled in and submitted to the investigator (student response rate=96.8%). Of them, 16 questionnaires either did not have basic information (e.g. tobacco use) or were not readable, thus excluded from the study. Finally 2032 questionnaires (1228 from governmental schools and 804 from non-governmental schools) were included in the analysis. The final sample was higher than the expected size due to the high response rate and higher number of students available in the classroom than that obtained from the database of District Education Office, Kaski.

3.4 Data collection method

Data was collected by using an anonymous self-administered questionnaire. Informed verbal consent from the school authority was obtained after explaining the purpose of the study. The anonymous self-administered questionnaire was distributed to the students of selected classes after explaining the purpose of the study and the instructions to fill in the questionnaire. Considering the sensitivity of the issue, the school authority was requested not to be present in the class during the filling in of the questionnaire. One-class period (approx. 45 min) was provided to fill in the questionnaire. Students were assured that the information they provided would remain confidential and thus were encouraged to be truthful in their responses. They were informed that their participation was completely voluntary and they could quit at any time.

3.5 Instrumentation

An anonymous self-administered questionnaire in *Nepali* language was used to collect the information. The questionnaire was pre-tested in Shree Jana Jagriti Gyan Rashmi Secondary School, Balajutar, Kathmandu so as to confirm its validity and reliability and to avoid ambiguity. Following the pre-test, some modifications in the order of the questions and terminology were made in the final questionnaire.

3.6 Validity and reliability

The following procedures were performed to increase the validity and reliability of the study.

1. All students were informed about the purpose of the study and instructed on how to fill in the questionnaire. They were motivated to provide more accurate information regarding their behaviours by the investigator's assurances that the information provided would be kept strictly confidential.
2. An *anonymous self-administered questionnaire* was used for maintaining the confidentiality of the information in the study.
3. Fifty randomly selected questionnaires (25 from governmental and 25 from non-governmental schools) were cross-checked for testing the reliability of data entry and found completely correct.
4. The school authority and personnel were requested not to be present in the class during the administration of the questionnaire to create a more comfortable environment for the students to express their true opinions/information.

5. There were a few inconsistencies in the information provided by the respondents, and such cases were excluded in final analysis.

3.7 Ethical consideration

1. All the information collected for the study was utilized only for the purpose of research and was not disclosed to anyone outside the research team.
2. Verbal consent was taken from all participating schools and students. The participation was completely voluntary. Their right to refuse to participate in the study (if they wished so) was respected.

3.8 Data management and analysis

Coding was done to simplify the process of data entry. All the data was entered in the database created in EPI Info Version 6.04d and analysed by importing the data file to EPI Info 2002 and SPSS 10.0 for windows.

The response rate for different questions was different; so the proportion was calculated based on the response taking each as an independent event. Thus, the number may not match each other in some cases. Random check of 50 forms was performed to ensure correct data entry. The EPI Info 2002 software was used to calculate the confidence interval of proportion and SPSS 10.0 for Windows for logistic regression analysis.

3.9 Exclusion criteria

Any students absent on the day of the survey were excluded from the study.

3.10 Limitations

The self-administered questionnaire was used, so there was a possibility of reporting false information. However, every effort was made to motivate respondents to provide true information. The study covered only the Pokhara sub metropolitan city, thus, it might not represent the situation of adolescent students of the entire district or the country as a whole.

Chapter IV

4. Results

The results of the study are presented in three sections. The first section describes the general characteristics of the respondents. The second section deals with the prevalence, types and determinants of tobacco use. The third section presents the results of logistic regression analysis.

The total number of the respondents in the study was 2032. However some of the respondents did not answer some questions either because they were not applicable for them or because they did not want to answer. Table 1 shows the response rate for some variables and personal characteristics.

Table 1: Response rate for some study variables

Variable	Total responses	Response Rate (%)
Sex	2005	98.7
Age	2000	98.4
Caste (Ethnicity)	1954	96.1
Grade	2026	99.7
Tobacco use	2020	99.4
Knowledge about hazards of tobacco use	1858	93.6
Exposure to pro-tobacco advertisement	1966	96.7
Age of initiation *	931	97.3
Type of tobacco use *	948	99.1

** Among those who report using tobacco*

As emphasis was given to obtaining information about tobacco use, the questions regarding characteristics of respondents were asked at the end of the questionnaire. Some of the respondents did not provide information regarding their sex, age, ethnicity and exposure to pro-tobacco advertisements.

4.1 General characteristics of study population

The majority (51.7%) of the respondents were of the age group 13-15 years. Nearly equal proportion of boys (51.5%) and girls (48.5%) participated in the study. About three fifths (60.5%) of the respondents were from governmental schools and two fifths (39.5%) were from non-governmental schools. Most of them were Brahmin (31.1%), followed by Gurung (27.3%), Chhetri (16.3) and Magar (10.5%).

Table 2: General characteristics of study population

Characteristics		Frequency	Percent
Age	10-12 yrs	9	0.5
	13-15 yrs	1033	51.7
	16-20 yrs	958	47.9
Sex	Boys	1033	51.5
	Girls	972	48.5
Grade	Eight	573	28.3
	Nine	886	43.7
	Ten	567	28.0
School	Government	1228	60.5
	Non Government	803	39.5
Ethnicity	Brahmin	608	31.1
	Chhetri	319	16.3
	Gurung	533	27.3
	Magar	206	10.5
	Newar	126	6.4
	Kami/Damai/Sarki (Scheduled caste)	81	4.1
	Others	81	4.1

Note: Number of respondents varies for different variables due to different response rate

4.2 Findings

4.2.1 Prevalence of tobacco use

This section deals with the tobacco use pattern of adolescent students among grades 8, 9 and 10 from both governmental and non-governmental schools of Pokhara sub metropolitan city. Prevalence, type and frequency of tobacco use are presented by sex, ethnicity and type of school.

Table 3: Prevalence of ever tobacco use by type of tobacco product (n=2032)

Category		Type of tobacco			
		Any tobacco product	Cigarette Bidi	Surti Khaini	Pan masala Gutkha
Sex	Boys	60.6 (± 3.1)	22.9 (± 2.2)	5.0 (±1.4)	51.4 (± 3.1)
	Girls	32.8 (± 3.0)	5.9 (± 1.6)	0.9 (± 0.7)	30.3 (± 3.0)
School	Government	38.0 (± 2.8)	11.7 (±1.9)	2.4 (± 0.9)	31.3 (± 2.7)
	Non Government	61.1 (± 3.4)	19.3 (±2.8)	4.0 (± 1.4)	56.3 (± 3.5)
Ethnicity	Brahmin/Chhetri	43.4 (± 3.2)	10.5 (± 2.1)	2.6 (± 1.1)	38.6 (± 3.2)
	Gurung/Magar	53.2 (± 3.7)	19.4 (± 2.9)	3.5 (± 1.4)	45.6 (± 3.7)
	Newar	46.0 (± 9.0)	12.7 (± 6.2)	2.4 (± 3.2)	40.5 (± 8.9)
	Others	43.8 (± 6.5)	17.9 (± 5.1)	3.3 (± 2.6)	37.9 (± 6.3)
Total		47.1 (± 2.2)	14.7 (±1.6)	3.0 (± 0.8)	41.2 (± 2.2)

Note: Values in the parenthesis indicate 95% Confidence Interval

Of the total respondents, nearly half (47.1%) of adolescent students ever used any tobacco product (Table 3). *Pan masala* and *gutkha* were the most commonly used smokeless tobacco products. About half (51.4%) boys and one-third (30.3%) girls ever used *pan masala* or *gutkha*. The use of tobacco was significantly higher among boys (60.6%) compared to girls (32.8%) and more common among students of non-governmental schools (61.1%) than those from governmental schools (38.0%). Almost all forms of tobacco were common among adolescent students of the Gurung/Magar ethnic group followed by adolescent students of the Newar and Brahmin/Chhetri ethnic groups.

Table 4: Proportion of adolescent students using tobacco by frequency of use (n=2020)

Category		Frequency of tobacco use			
		Current user	Past user	Experimental user	Never user
Sex	Boys	17.4 (± 2.4)	14.8 (± 2.3)	27.9 (± 2.8)	39.9 (± 3.1)
	Girls	8.6 (± 1.8)	6.1 (± 1.6)	17.4 (± 2.5)	67.9 (± 3.0)
School	Government	10.0 (± 1.8)	7.9 (± 1.6)	19.5 (± 2.3)	62.6 (± 2.8)
	Non Government	18.2 (± 2.8)	14.7 (± 2.5)	27.6 (± 3.2)	39.5 (± 3.5)
Ethnicity	Brahmin/Chhetri	10.7 (± 2.1)	8.7 (± 1.9)	23.3 (± 2.8)	57.3 (± 3.3)
	Gurung/Magar	16.9 (± 2.8)	23.4 (± 2.5)	22.2 (± 3.1)	47.5 (± 3.7)
	Newar	11.9 (± 6.1)	8.7 (± 5.4)	25.4 (± 7.9)	54.0 (± 9.0)
	Others	12.5 (± 4.4)	10.0 (± 4.0)	20.8 (± 5.3)	56.7 (± 6.5)
Total		13.2 (± 1.5)	10.6 (± 1.4)	22.7 (± 1.9)	53.5 (± 2.2)

Note: Values in the parenthesis indicate 95% Confidence Interval, Twelve cases not reporting the frequency of use were excluded in analysis

Of the total respondents, nearly one in seven (13.2%) were current (*either regular or occasional*) users of any tobacco products, one in four (22.7%) were experimental users (*i.e. used any tobacco products not more than 10 times*) and one in ten (10.6%) were past users of any tobacco product (Table 4). More boys (17.4%) were currently using tobacco products than girls (8.6%) and more students of non-governmental schools (18.2%) were using tobacco currently than students from governmental schools (10.0%). More adolescent students from the Gurung/Magar ethnic group were current users (16.9%) and past users (23.4%) of tobacco products than those from other ethnic groups. Higher proportions of adolescent students from Newar ethnic group (25.4%) were experimental users followed by those from Brahmin/Chhetri (23.3%), Gurung/Magar (22.2%) and other (20.8%).

4.2.2 Initiation of tobacco use

The average age of initiating tobacco use was 12.64 years. Initiation of tobacco use was earlier by a few months among girls (12.40 yrs) than boys (12.76 yrs). Similarly, adolescent students of non-governmental schools initiated tobacco earlier (12.48 yrs) than adolescent students of governmental schools (12.82 yrs).

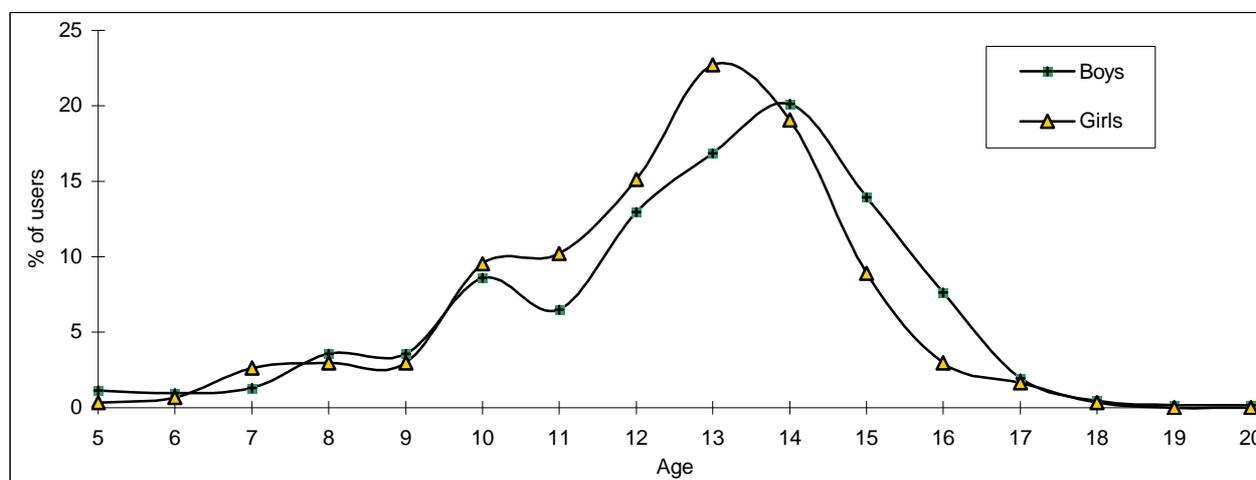
Table 5: Proportion of adolescent students initiating tobacco before 10 years of age and the average age of initiating tobacco (n= 958)

Category		Initiating tobacco use	
		Proportion below 10 years of age	Mean age
Sex	Boys	19.2 (± 3.2)	12.76 (± 1.7) yrs
	Girls	19.1 (± 4.6)	12.40 (± 0.3) yrs
School	Government	18.9 (± 3.7)	12.82 (± 0.2) yrs
	Non Government	18.9 (± 3.7)	12.48 (± 0.2) yrs
Total		18.9 (± 2.6)	12.64 (± 0.2) yrs

Note: Values in the parenthesis indicate 95% Confidence Interval

Some students reported initiation of tobacco use as early as 5 years of age and nearly one fifth (18.9%) of ever tobacco users initiated tobacco before they were 10 years of age. Initiation of tobacco use was found to dramatically increase after nine years of age until 13-14 years and then decreased (Figure 1).

Figure 1: Age of initiating tobacco use by sex



4.2.3 Tobacco use habit of family members and friends

Adolescent students were asked if any of their family members (parents, siblings and other members residing permanently) used tobacco. A substantial proportion (71.0%) of adolescent students reported that at least one family member used tobacco. Use of tobacco by family members was almost the same among boys (72.4%) and girls (70.0%) and among students of governmental schools (72.2%) and non-governmental schools (69.5%).

Table 6: Proportion of adolescent students by the tobacco use habit of family members and friends

Category		Tobacco use habits of family members		Tobacco use habits of friends	
		At least one family member uses tobacco *	No family member uses tobacco *	At least one of four best friend uses tobacco **	No best friend uses tobacco **
Sex	Boys	72.4 (± 2.8)	27.6 (± 2.8)	63.7 (± 3.0)	36.3 (± 3.0)
	Girls	70.0 (± 2.9)	30.0 (± 2.9)	23.0 (± 2.7)	76.7 (± 2.7)
School	Government	72.2 (± 2.6)	27.8 (± 2.6)	36.3 (± 2.8)	63.7 (± 2.8)
	Non Government	69.5 (± 3.2)	30.5 (± 3.2)	55.5 (± 3.5)	44.5 (± 3.5)
Total		71.0 (± 2.0)	29.0 (± 2.0)	43.9 (± 2.2)	56.1 (± 2.2)

Note: Values in the parenthesis indicate 95% Confidence Interval

** Calculated among 2032 cases who provided response regarding tobacco use habit of family members*

*** Calculated among 2007 cases who provided response regarding tobacco use habit of friends*

When asked about the tobacco use habit of their friends, nearly half of adolescent students (43.9%) reported that at least one of their four best friends used tobacco. More boys (63.7%) than girls (23.0%) reported the use of tobacco by friends. Similarly, more students of non-governmental schools (55.5%) reported the use of tobacco by friends than students of governmental schools (36.3%).

Table 7: Proportion of adolescent students using tobacco by the tobacco use habit of family members (n=2032)

Category		Proportion of adolescent students using tobacco among those from			
		Family with at least one member (parents, siblings and other members) using tobacco		Family with no member (parents, siblings and other members) using tobacco	
		Ever User	Never User	Ever User	Never User
Sex	Boys	66.0 (± 3.5)	34.0 (± 3.5)	46.6 (± 6.0)	53.4 (± 6.0)
	Girls	34.9 (± 3.7)	65.1 (± 3.7)	28.1 (± 5.3)	71.9 (± 5.3)
School	Government	41.0 (± 3.3)	59.0 (± 3.3)	29.9 (± 5.0)	70.1 (± 5.0)
	Non Government	67.4 (± 4.0)	32.6 (± 4.0)	46.9 (± 6.4)	53.1 (± 6.4)
Total		51.2 (± 2.7)	48.8 (± 2.7)	37.0 (± 4.0)	63.0 (± 4.0)

Note: Value in the parenthesis indicate 95% Confidence Interval

More adolescent students from families with at least one tobacco user were using tobacco than those from families with no members using tobacco (51.2% vs 37.0% respectively). Among adolescent students from families with at least one tobacco user, two thirds of boys (66.0%) and more than one third of girls (34.9%) were using tobacco, compared to less than half of boys (46.6%) and about one quarter of girls (28.1%) from families without any tobacco user. (Table 7)

Table 8: Proportion of adolescent students using tobacco by the tobacco use habit of friends (n=2007)

Category		Proportion of adolescent students using tobacco among those with			
		At least one of four best friends using tobacco		None of the four best friends using tobacco	
		Ever User	Never User	Ever User	Never User
Sex	Boys	72.6 (± 3.5)	27.4 (± 3.5)	39.8 (± 5.1)	60.2 (± 5.1)
	Girls	65.5 (± 6.5)	34.5 (± 6.5)	23.6 (± 3.2)	76.4 (± 3.2)
School	Government	65.6 (± 4.6)	34.4 (± 4.6)	22.9 (± 3.0)	77.1 (± 3.0)
	Non Government	76.1 (± 4.1)	23.9 (± 4.1)	42.8 (± 5.3)	57.2 (± 5.3)
Total		70.9 (± 3.1)	29.1 (± 3.1)	29.2 (± 2.7)	70.8 (± 2.7)

Note: Values in the parenthesis indicate 95% Confidence Interval

About seven in ten (70.9%) adolescent students with at least one best friend using tobacco were tobacco users themselves. Comparatively, only three in ten (29.2%) adolescent students who had no best friends using tobacco, were tobacco users themselves.

4.2.4 Knowledge about hazards of tobacco use

Students were asked if they were aware of the harmful effects of tobacco use. Of the total respondents, 1857 (91.4%) adolescent students claimed to have knowledge about the hazards of tobacco use. Among the students who reported to have knowledge about the health hazards of tobacco use, 846 (46.5%) have ever used tobacco and 993 (53.5%) were never users.

These students were requested to list the main health hazards of tobacco use. More than one fourth (26.8%) reported asthma and/or bronchitis; more than one tenth (11.7%) reported heart diseases; nearly seven in ten (68.5%) reported cancers of different organs and only few (0.5%) reported chronic bronchitis and/or COPD. They also reported many other short-term effects of tobacco use such as tooth discoloration, cough, smelling mouth etc.

Students' knowledge level about the hazards of tobacco use was determined by considering how many of the following health hazards they were able to recall in the questionnaire: asthma and/or shortness of breath; heart problems e.g. increased heart rate and/or heart attacks; lung and/or other cancers; and chronic bronchitis and/or COPD.

Table 9: Proportion of adolescent students by level of knowledge about hazards of tobacco use (n=1857)

Category		Level of knowledge about hazards of tobacco use		
		Good knowledge ^a	Some knowledge ^b	Poor knowledge ^c
Sex	Boys	28.1 (± 3.1)	46.0 (± 3.3)	25.9 (± 2.9)
	Girls	33.9 (± 3.1)	39.6 (± 3.2)	26.4 (± 3.0)
School	Government	30.1 (± 2.7)	39.1 (± 2.9)	30.9 (± 2.8)
	Non Government	32.5 (± 3.5)	48.6 (± 3.7)	18.9 (± 2.9)
Tobacco Use	Ever user	32.0 (± 3.2)	43.2 (± 3.4)	24.7 (± 3.0)
	Never user	30.1 (± 2.9)	42.5 (± 3.1)	27.4 (± 2.8)
Total		31.0 (± 2.2)	42.8 (± 2.3)	26.2 (± 2.0)

Note: Values in the parenthesis indicate 95% Confidence Interval

^a able to report at least two major health hazard/illness

^b able to report one major health hazard/illness

^c not able to report any major health hazard/illness

Among the students who reported to have knowledge about the health hazards of tobacco use, 2.8% could recall just one tobacco related hazard/illness (*some knowledge*), nearly one-third (31.0%) recalled at least two major hazards/illnesses (*good knowledge*), and the remaining 26.2% could not report any of the major tobacco related hazards/illnesses (*poor knowledge*).

Table 10: Proportion of adolescent students using tobacco by their level of knowledge about hazards of tobacco (n=1857)

Category		Proportion of adolescent students using tobacco among those having		
		Good knowledge	Some knowledge	Poor knowledge
Sex	Boys	68.1 (± 5.9)	60.3 (± 4.8)	53.3 (± 6.5)
	Girls	30.5 (± 5.3)	31.7 (± 5.0)	35.0 (± 6.2)
School	Government	39.2 (± 5.4)	36.5 (± 4.6)	35.7 (± 5.2)
	Non Government	60.8 (± 6.4)	60.0 (± 5.2)	64.5 (± 8.3)
Total		48.1 (± 4.2)	47.0 (± 3.3)	43.9 (± 4.5)

Note: Values in the parenthesis indicate 95% Confidence Interval

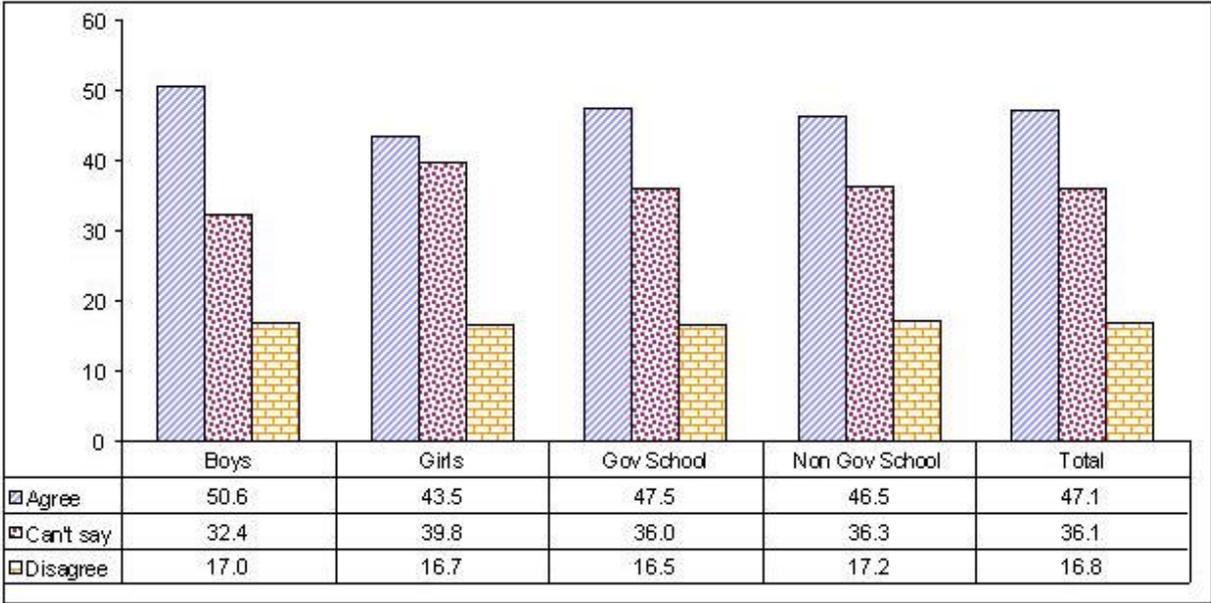
More boys were using tobacco among those with good knowledge (68.1%) than those with some knowledge (60.3%) or poor knowledge (53.3%). On the other hand, more girls were using tobacco among those with poor knowledge (35.0%) than those with some knowledge (31.7%) or good knowledge (30.5%).

Among governmental school students, the use of tobacco was higher among those with good knowledge (39.2%) than those with some knowledge (36.5%) or poor knowledge (35.7%). On the other hand, among students from non-governmental schools, the use of tobacco was higher among those with poor knowledge (64.5%) than those with some knowledge (60.0%) or poor knowledge (60.8%).

4.2.5 Perceptions towards tobacco use

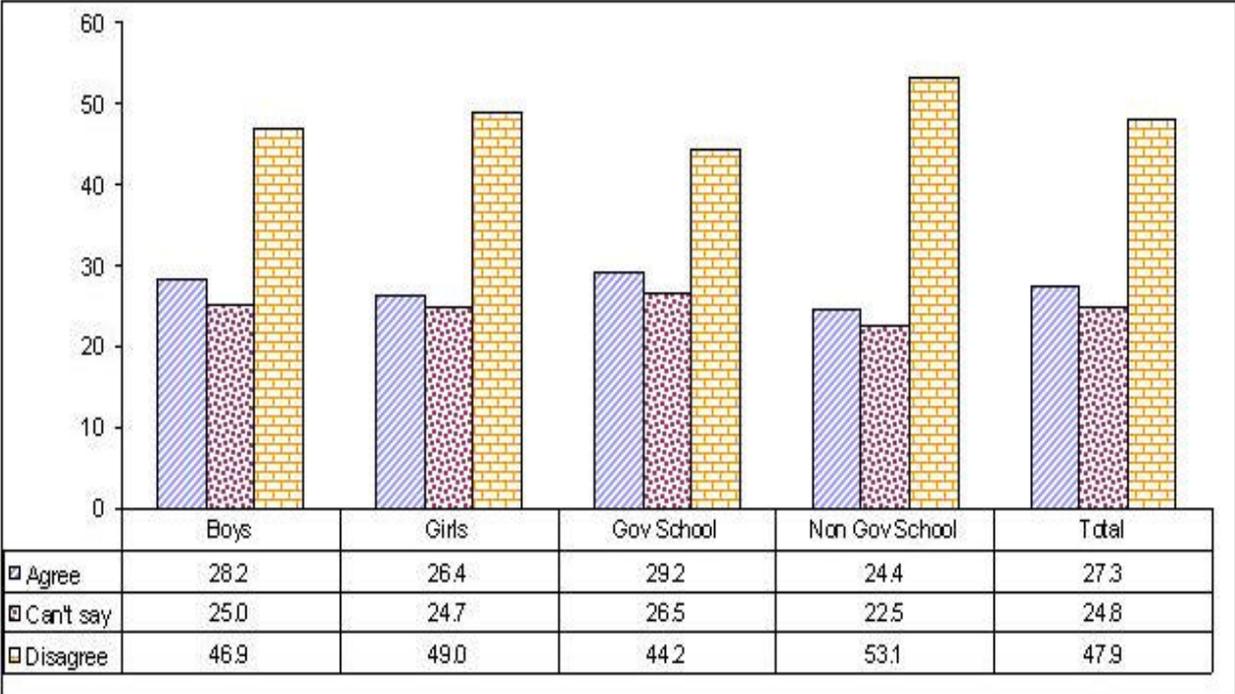
The perception of adolescent students was measured with a five-point scale on given statements. Students were asked to mark any one option among 'strongly agree', 'agree', 'can't say', 'disagree' and 'strongly disagree' for each given statement. Finally, the responses 'strongly agree' and 'agree' were merged to "agree", and responses 'strongly disagree' and 'disagree' were merged to "disagree" for simplification during analysis.

Figure 2: Proportion of adolescent students having different level of agreement on the statement that "tobacco users have more friends"



Nearly half (47.1%) of adolescent students agreed that tobacco users have more friends. More boys (50.6%) than girls (43.5%) thought that tobacco users have more friends. Only less than one fifth (16.8%) of adolescents disagreed with the statement that tobacco users have more friends (Figure 2).

Figure 3: Proportion of adolescent students having different level of agreement on the statement that tobacco users are more attractive



About half (47.9%) of adolescent students disagreed with the statement that tobacco users are more attractive. A higher percentage of girls (49.0%) than boys (46.9%) disagreed that tobacco users are more attractive. A higher proportion of students from non-governmental schools (53.1%) disagreed with the statement than those from governmental schools (44.2%).

Table 11: Proportion of adolescent students using tobacco by level of agreement with the statement that "tobacco users have more friends" (n=2013)

Category		Proportion of adolescents students using tobacco by level of agreement on the statement that "tobacco users have more friend"		
		Agree	Can't Say	Disagree
Sex	Boys	63.5 (± 4.2)	58.9 (± 5.4)	55.4 (± 7.6)
	Girls	30.0 (± 4.5)	33.9 (± 4.9)	38.8 (± 7.8)
School	Governmental	38.0 (± 4.1)	38.1 (± 4.7)	39.6 (± 7.0)
	Non Governmental	65.1 (± 5.0)	57.1 (± 5.9)	59.1 (± 8.5)
Total		48.6 (± 3.2)	45.7 (± 3.7)	47.5 (± 5.5)

Note: Values in the parenthesis indicate 95% Confidence Interval

The proportion of tobacco users among those who agreed with the statement that tobacco users have more friends was higher (48.6%) than those who disagreed (47.5%) or were undecided (45.7%), but the difference was not significant (Table 11).

Table 12: Proportion of adolescent students using tobacco by level of agreement with the statement that "tobacco users are more attractive" (n=2003)

Category		Proportion of adolescents students using tobacco by level of agreement on the statement that "tobacco users are more attractive "		
		Agree	Can't Say	Disagree
Sex	Boys	62.4 (± 5.8)	63.8 (± 6.1)	58.5 (± 4.5)
	Girls	31.2 (± 5.9)	30.0 (± 6.0)	35.3 (± 4.5)
School	Governmental	39.9 (± 5.3)	38.4 (± 5.5)	36.8 (± 4.2)
	Non Governmental	61.9 (± 7.1)	63.7 (± 7.3)	59.7 (± 4.8)
Total		47.7 (± 4.3)	47.5 (± 4.5)	46.9 (± 3.2)

Note: Values in the parenthesis indicate 95% Confidence Interval

The proportion of tobacco users among those who agreed with the statement that tobacco users are more attractive was higher (47.7%) than those who disagreed (46.9%) or were undecided (47.5%), but the difference was not significant (Table 12).

4.2.6 Exposure to pro-tobacco advertisements

Students were asked if they saw any tobacco promotional advertisement in any media (e.g. radio, TV, newspaper, magazine etc) or at any events (e.g. sporting events, musical shows, religious festivals etc) during the last 30 days.

Table 13: Proportion of adolescent students by their exposure to pro-tobacco advertisements (n=1966)

Category		Seen any tobacco promotional advertisement in media or events during last 30 days	
		Yes	No
Sex	Boys	36.5 (± 3.0)	63.5 (± 3.0)
	Girls	27.5 (± 2.9)	72.5 (± 2.9)
School	Government	31.6 (± 2.7)	68.4 (± 2.7)
	Non Government	33.3 (± 3.4)	66.7 (± 3.4)
Tobacco use	Ever Users	35.5 (± 3.1)	64.5 (± 3.1)
	Never Users	29.4 (± 2.8)	70.6 (± 2.8)
Total		32.3 (± 2.1)	67.7 (± 2.1)

Note: Values in the parenthesis indicate 95% Confidence Interval

Nearly one third (32.3%) of the total respondents replied that they had seen tobacco promotional advertisement in media or at events during the last thirty days. More boys (36.5%) than girls (27.5%) were exposed to tobacco promotional advertisement. The proportion of students exposed to tobacco promotional advertisement from governmental and non-governmental schools was almost the same (31.6% vs 33.3% respectively). More tobacco users (35.5%) were exposed to tobacco promotional advertisements than non-users (29.4%).

Table 14: Proportion of adolescent students using tobacco by their exposure to pro-tobacco advertisements (n=1966)

Category		Exposure to tobacco promotional advertisement in media or event			
		Exposed group		Non exposed group	
		Ever users	Never users	Ever users	Never users
Sex	Boys	65.3 (± 5.0)	34.7 (± 5.0)	58.3 (± 3.9)	41.7 (± 3.9)
	Girls	34.0 (± 6.0)	66.0 (± 6.0)	32.4 (± 3.6)	67.6 (± 3.6)
School	Government	40.2 (± 5.1)	59.8 (± 5.1)	37.0 (± 3.4)	63.0 (± 3.4)
	Non Government	69.1 (± 5.8)	30.9 (± 5.8)	57.3 (± 4.4)	42.7 (± 4.4)
Total		52.0 (± 4.0)	48.0 (± 4.0)	45.0 (± 2.7)	55.0 (± 2.7)

Note: Value in the parenthesis indicate 95% Confidence Interval

Among those students who were exposed to advertising, more were ever-users (52%) than never-users (48%). Also, more never-users (55%) were not exposed to advertising than ever-users (45%).

4.2.7 Environmental tobacco smoke

Students were also asked about their level of exposure to second hand smoke at home and in public places as their exposure to second hand smoke could influence them to initiate tobacco use and also adversely affects their health.

Table 15: Proportion of adolescent students by their exposure to environmental tobacco smoke at home (n= 1791)

Category		Exposed to environmental tobacco smoke in their home		
		Regular	Occasional	Never
Sex	Boys	8.3 (± 1.9)	49.7 (± 3.3)	42.0 (± 3.3)
	Girls	6.7 (± 1.8)	52.3 (± 3.4)	41.1 (± 3.4)
School	Government	8.6 (± 1.8)	55.7 (± 3.0)	35.7 (± 3.0)
	Non Government	5.7 (± 1.8)	44.0 (± 3.7)	50.3 (± 3.7)
Tobacco use	Ever Users	8.3 (± 1.9)	53.0 (± 3.4)	38.7 (± 3.3)
	Never Users	6.6 (± 1.7)	49.0 (± 3.3)	44.4 (± 3.3)
Total		7.4 (± 1.3)	50.9 (± 2.4)	41.7 (± 2.3)

Note: Values in the parenthesis indicate 95% Confidence Interval

Less than ten percent (5.7% - 8.6%) of adolescent students were exposed regularly to environmental tobacco smoke in their home, while more than half (49.0% - 55.7%) were exposed occasionally. As expected, more tobacco users were exposed to environmental tobacco smoke at home (8.3% regularly and 53.0% occasionally) than non-users (6.6% regularly and 49.0% occasionally).

Table 16: Proportion of adolescent students by their exposure to environmental tobacco smoke in public places (n=1845)

Category		Exposed to smoke from others in public places		
		Regular	Occasional	Never
Sex	Boys	3.5 (± 1.2)	79.7 (± 2.6)	16.8 (± 2.4)
	Girls	2.5 (± 1.1)	81.3 (± 2.2)	16.2 (± 2.5)
School	Government	2.0 (± 0.9)	78.0 (± 2.5)	20.0 (± 2.4)
	Non Government	4.5 (± 1.6)	83.7 (± 2.7)	11.8 (± 2.4)
Tobacco use	Ever Users	3.9 (± 1.4)	83.4 (± 2.6)	12.7 (± 2.3)
	Never Users	2.3 (± 1.0)	77.5 (± 2.7)	20.2 (± 2.6)
Total		3.0 (± 0.9)	80.3 (± 1.9)	16.6 (± 1.7)

Note: Values in the parenthesis indicate 95% Confidence Interval

Presently, smoking in public places, governmental offices and other institutions are restricted in Nepal. Table 16 shows that very few (3.0%) adolescent students were regularly exposed to environmental tobacco smoke in public places. About four out of five (80.3%) students reported that they were occasionally exposed to environmental tobacco smoke in public places. More tobacco users were exposed (3.9% regularly and 83.4% occasionally) to environmental tobacco smoke in public places than non-users (2.3% regularly and 77.5% occasionally).

Figure 4: Proportion of adolescent students using tobacco by their level of exposure to Environmental Tobacco Smoke at home and at public places

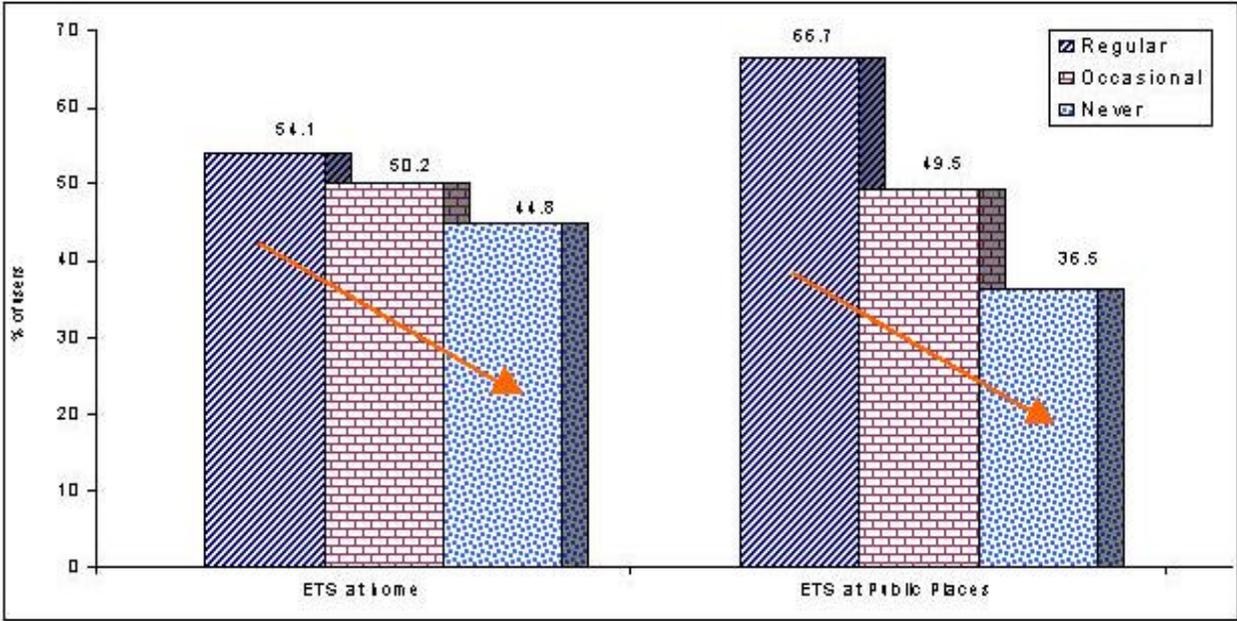


Figure 4 shows that the use of tobacco among adolescent students fell as exposure to environmental tobacco smoke decreased both at home and in public places. The proportion of tobacco users among those who were regularly exposed to environmental tobacco smoke at home was 54.1%, while the percentage of those who were occasionally exposed and never exposed was 50.2% and 44.8%, respectively. The proportion of tobacco users among those who were regularly exposed to environmental tobacco smoke in public places was 66.7% but decreased to 49.5% among those occasionally exposed and 36.5% among those never exposed.

4.3 Results from logistic regression analysis

Logistic regression analysis was performed to examine the relationship of students' tobacco use with their general characteristics and different factors e.g. knowledge and perceptions; tobacco use habit of family members and friends; and exposure to pro-tobacco advertisements and environmental tobacco smoke.

General characteristics

The use of tobacco may differ by the general characteristics of adolescent students. Thus, the sex of adolescent students, the type of school they are studying in, and their ethnicity were taken into consideration.

Table 17: Predictors of ever tobacco use by general characteristics of respondents (logistic regression analysis)

Variables		Effects of variable on being ever user of tobacco product			
		β	SE	Estimated Odds Ratio (95% confidence interval)	P
Sex	Girls *			1	
	Boys	1.15	0.09	3.15 (2.62 – 3.78)	<0.01
School	Governmental *			1	
	Non Governmental	0.95	0.09	2.58 (2.15 – 3.10)	<0.01
Ethnicity	Brahmin/Chhetri*			1	
	Gurung/Magar	0.39	0.10	1.48 (1.22 – 1.80)	<0.01
	Newar	0.11	0.19	1.11 (0.77 – 1.62)	0.57
	Others	0.02	0.15	1.01 (0.76 – 1.35)	0.91

* Reference group

Tobacco use was significantly associated with the sex of adolescent students. Boys were more likely to use tobacco compared to girls (OR=3.15, p<0.01). Similarly, adolescent students from non-governmental schools were more likely to use tobacco than adolescent students from governmental schools (OR=2.58, p<0.01). A significant difference was observed between adolescent students from the Gurung/Magar ethnic group compared to the Brahmin/Chhetri ethnic group (OR=1.48, p<0.01).

Knowledge and perception

Knowledge and perceptions are important influencing factors for initiating tobacco use. Thus, use of tobacco was examined with the students' level of knowledge about the hazards of tobacco use and their perceptions towards tobacco use.

Table 18: Predictors of ever tobacco use by knowledge about hazards and perceptions towards tobacco use (logistic regression analysis)

Variables	<i>Effects of variable on being ever user of tobacco product</i>			
	β	SE	Estimated Odds Ratio (95% confidence interval)	p
Knowledge about the hazards of tobacco use				
Poor knowledge*			1	
Some knowledge	0.12	0.12	1.13 (0.90 – 1.42)	0.29
Good Knowledge	0.17	0.12	1.18 (0.93 – 1.51)	0.18
Perception that tobacco users have more friend				
Disagree *			1	
Can't say	0.08	0.13	0.93 (0.72 – 1.20)	0.56
Agree	0.04	0.13	1.04 (0.82 – 1.34)	0.73
Perception that tobacco users have more friend				
Disagree *			1	
Can't say	0.02	0.11	1.02 (0.82 – 1.27)	0.86
Agree	0.03	0.11	1.03 (0.84 – 1.27)	0.77

* Reference group

Students' level of knowledge regarding the harmful effects of tobacco use was not significantly associated with their use of tobacco. Similarly, no significant relationship was observed between the tobacco use of adolescent students and their perception towards tobacco users.

Tobacco use habit of family members and friends

Tobacco use by family members and friends may strongly influence adolescents to use tobacco. Thus, students' tobacco use was examined in association with the tobacco use behavior of family members and best friends.

Table 19: Predictors of ever tobacco use by tobacco use habit of family members and friends (logistic regression analysis)

Variables	<i>Effects of variable on being ever user of tobacco product</i>			
	β	SE	<i>Estimated Odds Ratio (95% confidence interval)</i>	<i>p</i>
Tobacco use habit of family members				
Not any family member use tobacco *			1	
At least one family member use tobacco	0.58	0.10	1.79 (1.47 – 2.18)	<0.01
Tobacco use habit of friends				
None of four best friend use tobacco*			1	
At least one of four best friend use tobacco	1.78	0.10	5.93 (4.88 – 7.20)	<0.01
Tobacco use habit of family members and friends (Combined)				
Both friends/family members do not use tobacco *			1	
At least one among friends or family members use tobacco	0.67	0.14	1.95 (1.49 – 2.56)	<0.01
Both friends/family members use tobacco	2.19	0.15	8.93 (6.66 – 11.99)	<0.01

* Reference group

Adolescent students were more likely to use tobacco if at least one family member (parents, siblings and other members residing permanently) used tobacco (OR=1.79, $p<0.01$) than those who had no family members using tobacco. Adolescent students who had at least one best friend who used tobacco were more likely to use tobacco (OR=5.93, $p<0.01$) than those who had no best friends using tobacco. When both friends and family members of an adolescent student use tobacco, the possibility of being a tobacco user is higher (OR=8.93, $p<0.01$) than those with no family members or friends using tobacco.

Advertisements and Environmental Tobacco Smoke

Exposure to tobacco promotional advertisements and exposure to environmental tobacco smoke at home and in public places are environmental factors that could influence adolescent students to initiate tobacco use.

Table 20: Predictors of ever tobacco use by pro-tobacco advertisements and environmental tobacco smoke (logistic regression analysis)

Variables	<i>Effects of variable on being ever user of tobacco product</i>			
	β	SE	Estimated Odds Ratio (95% confidence interval)	p
Exposure to pro tobacco advertisement				
No *			1	
Yes	0.28	0.10	1.32 (1.10 – 1.60)	<0.01
Exposure to environmental tobacco smoke at home				
Never *			1	
Occasionally	0.22	0.10	1.24 (1.02 – 1.51)	0.03
Regularly	0.38	0.19	1.46 (1.01 – 2.11)	0.05
Exposure to environmental tobacco smoke at public place				
Never *			1	
Occasionally	0.53	0.30	1.71 (1.32 – 2.20)	<0.01
Regularly	0.99	0.13	2.69 (1.50 – 4.83)	<0.01

* Reference group

Exposure to tobacco promotional advertisement in the media or at social events was significantly associated with the tobacco use behavior of adolescent students (OR=1.32, $p<0.01$). Students regularly exposed to environmental tobacco smoke at home were more likely to become tobacco users (OR=1.46, $p=0.05$) than those who were never exposed. Students who were regularly exposed to environmental tobacco smoke in public places were also more likely to become tobacco users (OR=2.69, $p<0.01$) than those who were never exposed.

Chapter V

5. Discussion

The aim of the study was to determine the prevalence and type of tobacco use among students in grades 8, 9 and 10 in Pokhara sub-metropolitan city and to identify the factors that influence them to initiate tobacco use.

5.1 Prevalence of tobacco use

Nearly half (47.1%) of adolescent students studying in grades eight, nine and ten were ever users of tobacco. Most of other studies were mainly focused on the current use of tobacco products. The proportion of experimental users was very low among total ever users of tobacco products in those studies. Equal emphasis was given to collect the information regarding experimental use of tobacco products and current use of tobacco product in this study. Thus, high proportions (22.7%) of adolescent students were found using tobacco product for experimentation.

Boys were 3.15 times more likely to use tobacco compared to girls. The finding is almost similar to the result of GYTS. According to GYTS, 22.5% of boys and 7.9% of girls ever used any tobacco product in Nepal.²³ The proportion of ever users may be higher among boys than girls as boys in Nepalese culture enjoy higher level of freedom regarding their individual behaviors than girls both from the family and society.

Non-governmental school students were 2.56 times more likely to use tobacco compared to governmental school students. Generally, students at non-governmental schools are from more affluent families than those at governmental schools. Thus, non-governmental school students may have more money to spend to purchase tobacco products than students at governmental schools, which may enable them to use tobacco more freely than governmental school students.

Adolescent students of the Gurung/Magar ethnic group were 1.48 times more likely to use tobacco than those from the Brahmin/Chhetri ethnic group. The difference may be due to a combination of the higher economic status of the Gurung/Magar ethnic group and the more restricted culture of Brahmin/Chhetri.

About one in seven (14.7%) adolescent students used tobacco in smoking form like cigarettes or *bidis*. A substantial proportion (41.2%) of adolescent students were using *pan masala* and *gutkha* of different brands available in the market. As some of the products like mouth fresheners and processed betel nuts, which does not contain tobacco, are available in the market in similar packaging. Thus students are not aware what product really contain tobacco and which does not. Thus, they use *pan masala* unknowingly. During fieldwork, most of the students expressed that they were not aware that *pan masala* or *gutkha* were also tobacco products and harm them, though this information was not systematically collected in this study. Adolescent students were using *pan masala* or *gutkha* without knowing the ingredients and hazards, as mouth freshener or as processed betel nut. In addition *pan masala* and *gutkha* were convenient to hide from their parents and teachers, as use of these products is usually not allowed in younger age by their parents and teacher. In comparison to other tobacco products, use of *surti* or *khaini* was less common (3.0%) among adolescent students. The use of non-smoking tobacco products is increasing in Nepal as they were easily available everywhere, easier to use than those smoked products and less expensive than cigarettes.

High proportions (22.7%) of adolescent students were experimental users during the time of the survey and about one in ten (10.6%) students had used tobacco products in the past but were not current users. Thirteen percent of adolescents were currently using tobacco products (*1.7% regularly and 11.6% occasionally*). The result is almost similar to the result from GYTS, where 11.6% of students were using tobacco products currently, among which 15.3% were boys and 6.4% were girls.²³

The prevalence of tobacco use among school adolescents of Pokhara was higher than earlier tobacco use studies in Nepal. The Global Youth Tobacco Survey in Central Developmental Region of Nepal in 2001 reported that the ever use of tobacco was about 16.3% of adolescent students (22.5% boys and 7.9% girls).³³ Two different school based studies by Sharma S and Acharya GP et al. in a secondary school of Kathmandu also showed that the significantly more boys smoked as compared to girls.^{24,25} The recent study from Turkey also showed that boys were more likely to use tobacco as compared to girls.¹⁵ Higher use of tobacco among adolescent students in Pokhara may be due to the differences in the ethnic distribution of study population and other confounding factors. The current use of tobacco was almost similar to other studies

among adolescents and youths, but the experimental use of tobacco was higher than other studies. Thus, the use of tobacco is increasing in Nepal as higher proportion of adolescents are currently experimenting the tobacco products especially tobacco products that are chewed.

A community based study in Nepal among youths showed that the current use of tobacco among male was 17.2% as compared to female (6.7%).¹³ The recent Demographic and Health Survey in Nepal showed that the current use of any tobacco among the 15-19 age group was 36.7%.¹⁴ These differences may be due to the differences in study design. These results are from the community based studies. Though these results are not directly comparable to the result of this study, the results of the present study are reliable with the result obtained from these studies.

5.2 Age of initiating tobacco use

The average age of initiating tobacco use was 12.64 years (12.76 for boys and 12.40 for girls). About one of five (18.9%) adolescent students initiated tobacco use before 10 years of age. Experimental use was the main reason for initiating tobacco use by adolescents along with peer pressure. Though the proportion of girls using tobacco was less than boys, girls initiated tobacco earlier than boys.

The proportion of adolescents initiating tobacco before they are 10 years of age was lower in this study (18.9%) compared to the GYTS in the Central Development Region of Nepal. Results from the GYTS showed that 23.1% of adolescent-students initiated smoking before they were 10 years of age in Nepal and the median value of the proportion from all countries covered by the GYTS was 23.9%.²¹ Other studies showed that initiation of tobacco use (cigarette or other products) starts around 13-14 years in most of the countries.²⁶ According to the study on tobacco economics in Nepal, the age of first smoking was 16.6 years and was lower for females (15.8 yrs) than males (17.0 yrs).¹³ Youth are perhaps experimenting sooner with smokeless tobacco products than cigarettes, thus the age of initiating tobacco use among them is lower than the age of first smoking.

When the trend of tobacco use analyzed, the age of initiating the tobacco use increased significantly after the 9 years of age. During this age, adolescents' activities are less supervised by their parents than in their earlier life and also are more influenced by the activities and

behavior of peers. As both younger and older students are studying in the same school, the younger ones were influenced by the behavior of older ones. These older students could have a real influence on the younger students in terms of the younger ones wanting to emulate the behaviour of the older ones.

5.3 Tobacco use habit of family members and friends

A substantial proportion (71.0%) of the adolescent students reported that at least one of their family members (parents, siblings and other members residing permanently) use any tobacco products. This result (71%) is much higher than the GYTS where 37.8% lived in homes where others smoke. The people of urban areas are more likely to use tobacco. Thus, the result is higher than the result of GYTS that had also covered the rural area. The results of this study revealed that adolescent students from families with at least one member using tobacco were 1.79 times more likely to use tobacco compared to those with no members using tobacco. Tobacco use of family members is likely to influence adolescents. When adolescents are exposed to the tobacco use habit of family members, they are more likely to perceive tobacco use as a positive and acceptable behavior. Thus, this helps to develop favorable personal beliefs and subjective norms about tobacco use, and ultimately leading youth to take up the habit.

Nearly half (43.9%) of adolescent students reported that at least one of their four best friends use tobacco. Adolescent students with best friend using tobacco were 5.93 times more likely to use tobacco compared to those with no friends using tobacco. During adolescence, the relationship with the peer group becomes stronger than family members and thus young people are influenced more by the habits of their friends. Imitating the behavior of friends is common practice among adolescents who want to be like their peers and influences them to use tobacco.

An amplified effect was observed among adolescent students who were exposed to the tobacco use behavior of both family members and best friends. These students were 8.93 times more likely to use tobacco than those who did not have any family members or best friends using tobacco. The recent Turkish study also explained that youths close friends who smoke were more likely to experiment and continue smoking and the effect of peer group is more strong among girls than boys.¹⁸

Although detailed studies on the influence of family members and friends were not available in Nepal, different international studies suggested results similar to this study. A positive correlation was observed with parental tobacco use from a study in Tunisia.²⁶ Several other studies showed that adolescents with a parent or older siblings or a friend who smoke cigarettes are more likely to become a smoker.^{17, 18, 19}

5.4 Knowledge regarding the hazards of tobacco use

Although a majority (91.4%) of adolescent students claimed to have knowledge of the hazards of tobacco use, the results showed that about one fourth (26.2%) of the respondents in fact had poor knowledge, and were unable to recall even one of the main health hazards of tobacco use. Higher proportions of girls had good knowledge about the hazards of tobacco use compared to boys. The proportion of adolescent students having poor knowledge was significantly lower among non-governmental school students than governmental school students. The difference may be due to the better educational activities and restrictions to use tobacco in non-governmental school than in governmental schools.

In contrary to the general assumption, the proportion of adolescent students using tobacco was higher among those with good knowledge of the hazards of tobacco use. But it is interesting to note here that when the results were stratified by sex, there was an opposite trend among boys and girls. Use of tobacco was positively correlated with the level of knowledge among boys but negatively correlated among girls. Similarly, a positive relation was observed in tobacco use and the level of knowledge among adolescent students of non-governmental schools, but the reverse was found in the case of governmental school students. In Nepal, girls are more confined within the close supervision of family members than boys. Thus girls have more restriction and close supervision against high-risk behaviors. As adolescent students initiate the use of tobacco, adolescents learn something about its hazards from their peers too. But the results of this study indicated that knowledge of the hazards of tobacco use did not influence students' decisions about initiating tobacco use. Although the students have some knowledge about the health hazards, they may have wrong perceptions about tobacco use. A substantial proportion of students thought that tobacco users are more attractive and have more friends. In this situation, they may overlook the health hazards in favor of their perceived benefits of tobacco use. This study suggests, therefore, that knowledge of the health hazards is not sufficient to protect

individuals from initiating tobacco use, although education is a necessary component of a comprehensive tobacco control program.

5.5 Perceptions regarding tobacco use

Nearly half (47.1%) of the respondents thought that adolescents who use tobacco have more friends and about one fourth (27.3%) thought that adolescents who use tobacco are more attractive. These perceptions may have developed among adolescent students from the information received from their peers. This suggests that adolescents were not getting valid or complete information about the hazards and benefits of tobacco. The source of information is mostly informal and un-systematic, which resulted in the development of some wrong impressions regarding tobacco use. The glamour and slogans used in tobacco advertisements also result in the development of favorable perceptions of tobacco use as desired by tobacco companies.

Among adolescent students who agreed with the statement that "tobacco users have more friends", nearly half (48.6%) were tobacco users as compared to those who disagree (47.5%) or were undecided (45.7%). Similarly, adolescents who agreed with the statement that "tobacco users are more attractive", nearly half (47.7%) were tobacco users as compared to those who disagreed (46.9%) and those who were undecided (47.5%). Logistic regression analysis showed that students' perceptions regarding tobacco use alone was not significantly associated with their tobacco use behavior.

The GYTS results in Nepal showed that 34.1% of adolescent students think that boys who smoke have more friends and 19.7% of adolescent students think that girls who smoke have more friends. Similarly, 21.1% of adolescent students think that smoking makes boys more attractive and 14.7% think that smoking makes girls look more attractive. All these results were higher than the median value of all GYTS countries.²¹

5.6 Exposure to pro-tobacco advertisement

Nearly one third (32.3%) of adolescent students reported that they saw tobacco promotional advertisements in the media or at social or sporting events during the last 30 days. Although the advertisement of tobacco products in national electronic media (i.e. Radio and Television) is

already banned, national newspapers and magazines with high youth readerships are still publishing the attractive advertisements of tobacco products. In addition, youths are being targeted through large billboards on city corners and through sporting events, music concerts, street festivals and other social events and gatherings that are sponsored by the tobacco companies. As Indian and other international television channels are very popular among youths, attractive and influencing advertisements in those channels were found to encourage the adolescent students to use tobacco. Different catchy slogans in advertisement banners e.g. "*safalto to pratik*" (symbol of success), "*sahasi ko ek matra chahana*" (the demand of the brave person), "*my Nepal my pride: Surya King*" etc. are being used to target and attract adolescents to take-up tobacco. The clips of smoking film stars in different cinemas also influence students to use tobacco. Other promotional advertisements of tobacco companies were shop decoration, distribution of gifts etc. All these promotional advertisements show tobacco use as a pleasurable, relaxing and sociable behavior.

Tobacco companies have long been known to design marketing strategies aimed at young potential tobacco users through different marketing approaches. After all tobacco advertisement in national television and radio was banned in Nepal, tobacco companies targeted adolescents through attractive advertisements in popular magazines, large billboards on major city corners and by sponsoring different social activities. In addition, adolescents continue to be exposed to tobacco advertisements on foreign television channels that are accessible in Nepal. The results of this study showed that adolescent students exposed to tobacco promotional advertisements were 1.32 times more likely to use tobacco than those who were not exposed. Similarly, other research has shown that youth who were regularly exposed to such advertisements were more likely to use tobacco.³¹

More adolescents reported exposure to pro-tobacco advertisement in the GYTS in the Central Developmental Region of Nepal than the present study. According to the GYTS, 44.0% of non-smokers and 51.2% of current smokers were exposed to pro-tobacco advertisements. Although, anti tobacco advertisement has a protective effect, it was unable to counteract the effects of pro-tobacco advertising in the same cohort.³⁹

5.7 Exposure to Environmental Tobacco Smoke

Nearly three of five adolescent students were exposed to environmental tobacco smoke (7.4% regularly and 50.9% occasionally) in their home and four of five adolescent students were exposed (3.0% regularly and 80.3% occasionally) to environmental tobacco smoke in public places. Substantial proportions of non-users (55.6% at home and 79.8% in public places) were being exposed to environmental tobacco smoke, limiting their rights to live and grow in a smoke free environment. In the GYTS in Nepal, about 35.8% of never smokers and 53.6% of current smokers reported that they were exposed to smoke from others in their home in last seven days and 44.7% of never smokers and 63.8% of current smokers reported that they were exposed to smoke from others in public places.²³ All these results illustrate the alarming situation of exposure to second hand smoke, which not only harms the health of adolescents, but also influences them to use tobacco.

Exposure to environmental tobacco smoke at home and in public places was significantly associated with the tobacco use behavior of adolescent students. Adolescent students who live in the homes where other members regularly use tobacco were 1.46 times more likely to use tobacco than those not exposed to environmental tobacco smoke at home. Adolescents who are exposed to second hand smoke outside their home were 2.69 times more likely to use tobacco than those who were not exposed.

There is a possibility of an incremental increase in the prevalence of tobacco use as a positive relation was observed between the tobacco use of adolescent students and their exposure to environmental tobacco smoke. A large proportion of adolescent students, especially never users of tobacco, are being exposed to environmental tobacco smoke favoring them to become tobacco users in the future.

Chapter VI

6. Conclusions and Recommendations

This cross-sectional survey of tobacco use among adolescent students of Pokhara sub metropolitan city explored their tobacco use behavior and influencing factors for initiating tobacco use.

A high proportion (47.1%) of adolescent students were ever-users of tobacco. Non-smoking forms of tobacco like *pan masala and gutkha*, were more commonly used by these students. Most of the ever-users initiated tobacco use by 13 years of age. The majority of them are experimental users, but are potential regular users in the future. Among ethnic groups, a higher proportion of adolescent students of Gurung/Magar family were using tobacco than other groups.

- ↳ School based educational programs focusing on all forms of tobacco (both smoked and smokeless) should be planned and implemented. Special attention and culturally-appropriate education programs should be targeted at the adolescent students of the Gurung/Magar ethnic group. Different intervention programs should focus on different aspects like, programs to discourage the uptake of tobacco among the young students between 9-12, and cessation programs for the older students.

Tobacco use by close friends and family members were strong influencing factors for tobacco use of adolescent students. A substantial proportion of adolescent students are being exposed to the tobacco use behaviour of family members and friends, creating an environment to develop more tobacco users in the future.

- ↳ Parental counselling is necessary to inform them about the influence of their tobacco use on their children. Programs to protect every adolescent from being exposed to the tobacco use of others are necessary. Mobilization of tobacco non-users in motivating adolescent students to prevent initiation and quitting tobacco use would help to create a supportive environment.

Only about one-third of adolescent students had good knowledge about the hazards of tobacco use; nearly half thought that tobacco users have more friends and more than one in four thought that tobacco users are more attractive.

- ↳ Health education programs should be provided to adolescent students to raise the level of awareness of the hazards of tobacco use and to change their perceptions. More anti-tobacco messages in the print, radio and/or television and psycho-social support to help students to develop a positive self-image to counter-act the pro-tobacco message are necessary.

The study suggested that exposure to tobacco promotional advertisements steers students towards the use of tobacco. Although tobacco related advertisements are already banned in national electronic media, youths are being targeted through billboards, magazines and newspapers, and by sponsorship of social and other events of youth interest by the tobacco companies. As a large proportion (*among whom significant numbers were never users of tobacco*) of adolescent students were exposed to tobacco promotional advertisements, the proportion of tobacco users is likely to increase in the future.

- ↳ Efforts should be made to legislate a complete ban of all direct and indirect tobacco advertisements in the print and broadcast media. Restrictions should be made in sponsoring youth targeted activities by tobacco companies. In addition, students should be informed about the misinformation on tobacco use that is covered/glamorised in the tobacco promotional advertisements.

Adolescent's exposure to environmental tobacco smoke is a doubly concerning issue. First, exposure to environmental tobacco smoke results in detrimental health effects and second, the study revealed that exposure to environmental tobacco smoke at home or in public places increases the likelihood of adolescents taking up the tobacco habit. An overwhelming proportion of adolescent students (*with substantial proportion of never users*) were exposed to environmental tobacco smoke at home and/or in public places limiting their rights to live in smoke free environments.

- ↳ Immediate action to reduce adolescents' exposure to environmental tobacco smoke is necessary. Prohibiting tobacco use at school and monitoring the high-risk behaviours of adolescents in school is necessary. Announcing schools and other public places as “tobacco-free places” will help to minimize the exposure to tobacco smoke. It also helps to change social norms and ultimately to minimize the use of tobacco.

Chapter VII

7. References

1. FHD/MOH. National Adolescent health and development strategy, Family Health Department, Ministry of Health, 2000.
2. Jacobson B. Smoking and health: A new generation of campaigners. *Br Med J* 1983; 287: 483-4.
3. Anonymous. Health or smoking (editorial). *Br Med J* 1983; 287:1570-1.
4. WHO. The next wave of the tobacco epidemic: Women. World No Tobacco Day 1997, WHO, SEAR, New Delhi.
5. WHO. Tobacco in SEAR: A health challenge. WHO, SEAR, New Delhi.
6. WHO. World Health Report 2001. WHO, Geneva, 2001. pp 3.
7. Mackay J, Eriksen M. The tobacco atlas. Available online from: URL <http://www5.who.int/tobacco/page.cfm?sid=84>. WHO. 2002 [Accessed on 20th Feb 2003].
8. WHO/RITC. Confronting the epidemic: A global agenda for tobacco control research. Geneva: WHO/RITC, 1999.
9. WHO/TFI. Statement on treatment for tobacco dependence, Internet site of WHO, Tobacco Free Initiative, <http://www5.who.int/tobacco/index.cfm>. [Accessed on May 29, 2002].
10. WHO. Leave the pack behind, World No Tobacco Day, 31st May 1999, WHO report, WHO.
11. WHO. Tobacco- Health Facts. Fact sheet number 221. April 1999. Available online from: URL <http://www.who.int/inf-fs/en/fact221.html> [Accessed on 20th Feb 2003].
12. WHO. World No Tobacco Day, 31st May 2000, WHO report, South East Asia Region.
13. WHO. Women of South East Asia: A health profile. Regional Office for South East Asia, New Delhi, 2000.
14. Pande BR, Karki YB, Pant KD. A study on tobacco economics in Nepal. 2000, WHO/SEARO.
15. FHD/MOH. Nepal Demographic and Health Survey 2001. Calverton, Maryland, USA: Family Health Division, Ministry of Health; New Era; and ORC Macro.
16. Pandey MR, Venkatramaiah SR, Neupane RP, et al. Epidemiological study of tobacco smoking behaviour in a rural community of the hill region of Nepal with special reference to attitudes and beliefs. *Community Medicine* (1987) Vol. 9 No. 2 pp 110-120.

17. WHO. The World Health Report 2002. WHO.
18. Syme SL. Education and modification of behaviours,: the case of cigarette smoking. In: Holland W, et al. Eds. The Oxford Textbook of Public Health, Oxford University Press pp 237-244.
19. Erbaydar T, Lawrence S, Dagli E, et al. Smoking patterns of youth in Turkey. Istanbul: Marmara University; 2002. Grant 001726-022. Research for International Tobacco Control, International Development Research Centre, Ottawa.
20. Green DE. Teenage smoking: immediate and long term patterns, Washington DC, US government Printing office, 1979 Nov. is, 168p [Abstract from POPLINE CD ROM, June 2002]
21. Horn D, Courts FA, Taylor RM, et al. Cigarette smoking among high school students. American Journal of Public Health 49(11): 1497-1511. November 1959. [Abstract reviewed from POPLINE CD ROM, June 2002]
22. GYTS collaborative group. Tobacco use among youths: A cross-country comparison, Tobacco control 2002; 11:252-270.
23. CDC. Nepal global youth tobacco survey fact sheet Available online from http://www.cdc.gov/tobacco/global/gyts/factsheets/pdf_files/nepal.pdf [Accessed on: 26th Nov 2002].
24. Pandey MR, Pathak RP. Challenges of Tobacco Use Behavior in Central Development Region of Nepal: Global Youth Tobacco Survey, Nepal. Submitted to Centers for Disease Control and Prevention. (Unpublished document)
25. Sharma S. Life skills and high-risk behaviors of adolescents in Kathmandu. MPH thesis submitted to Department of Community Medicine and Family Health, Institute of Medicine, February 2002.
26. Acharya GP, Acharaya SL. Tobacco Use among School Children of Bhanubhakta Memorial Higher Secondary School of Kathmandu. Submitted to Nepal Health Research Council. (2001).
27. Fakhfakh R. et. al. Tobacco use in Tunisia: Behaviour and awareness. Bulletin of the World Health Organization 2002.80 (5).
28. WHO. Tobacco free film: Tobacco free fashion. Action!. World No Tobacco Day 2003 (Brochure).
29. Straub DM et al. Effects of pro and anti tobacco advertising on non smoking adolescents' intention to smoke. Journal of Adolescent Health 2003, 32:36-43.

30. World Bank. *Curbing the Epidemic: Governments and the Economics of Tobacco Control*. The World Bank, Washington D.C. 1999.
31. National Institute of Health/US. Teenage smoking: national pattern of cigarette smoking ages 12 through 18, in 1972 and 1974, Bethesda, Maryland, Department of Health Education and Welfare, 1976. (NIH 76-931) 123p. [Abstract from POPLINE CD ROM, June 2002]
32. North Memorial Medical Center. Health encyclopedia. Available online from: URL <http://198.72.3.232/HealthEncyclopedia/> [Accessed on 25 May 2002].
33. CDC. *Global Youth Tobacco Survey Handbook 2000*. CDC, USA.
34. NDI. *Nepal district profile 2002*, National Development Institute, March 2002
35. Green LW. The Precede Proceed Model [Obtained from <http://www.ihpr.ubc.ca/precede.html>]
36. Poulsen LH. Exposure to teachers smoking and adolescent smoking behaviour: analysis of cross sectional data from Denmark. *Tobacco Control* 2002; 11:240-251.
37. Bauman KE, Carver K, Gleiter K. Trends in parent and friend influence during adolescence, The case of adolescent cigarette smoking. *Addictive Behaviors* 26 (2001) 349 – 361.
38. Karki YB. High tobacco use in high hills of Nepal. *Lifeline*, a quarterly from the WHO South-East Asia Region on Tobacco and Alcohol Issues. Vol. 8 May 2002.
39. Taylor AL, Bettcher DW. WHO framework convention on Tobacco Control: a global "good" for public health. *Bulletin of the World Health Organization*, 2000, 78, (7).

Annex 1: Questionnaire

TOBACCO USE AMONG SCHOOL ADOLESCENTS POKHARA, 2003

Namaste! Following are the questions for investigating the use of tobacco products among school adolescents. You are kindly requested to provide the correct information in each question. It is assured that the information will not be disclosed to any body specifying your identity. The questionnaire is anonymous and thus you need not have to write your name and any other identification in this questionnaire.

1. Have you ever tried or experimented with cigarette smoking or use of tobacco in any form, even one or two puffs?
 Yes
 No [go to question # 7]

 2. If yes, how frequently do you consume tobacco product?
 Regular use
 Occasional use
 Past use
 Experimental use (not more than 10 times)

 3. What tobacco products do you consume?
 Cigarettes
 Surti
 Khaini
 Pan Masala, Pan Parag, Gutkha
 Bidi
 Other (Specify)_____

 4. How old were you when you first tried a cigarette or used any tobacco product?
_____ Years

 5. What are the influencing factors for initiating tobacco use in your life?
(Provide the weightage in percentage for each factor)
- | Factors | Weightage |
|-----------------|-----------|
| Peer pressure | |
| Imitating | |
| Experimentation | |
| Other (Specify) | |
| Total | 100 |

6. During the past years, have you ever tried to quit tobacco use?
 Yes
 No

If yes, Why? _____

7. Do you know about the harmful effects of tobacco use?
 Yes
 No

If yes, please list some harmful effects.

8. Please provide your opinion regarding following statements

1. Adolescent who use tobacco have more friends

Strongly agree Agree Can't Say Disagree Strongly Disagree

2. Adolescent who use tobacco are more attractive

Strongly agree Agree Can't Say Disagree Strongly Disagree

3. Once someone has started tobacco use, it would be difficult to quit

Strongly agree Agree Can't Say Disagree Strongly Disagree

4. It is very difficult to resist peer pressure for tobacco use

Strongly agree Agree Can't Say Disagree Strongly Disagree

5. The smoke from other people's cigarettes harm you

Strongly agree Agree Can't Say Disagree Strongly Disagree

6. Smoking should be banned in public places

Strongly agree Agree Can't Say Disagree Strongly Disagree

9. Do any of your family members and friend use any tobacco product? [*✓ all that apply*]

Father Cigarettes Chewing tobacco Other _____ Not any

Mother Cigarettes Chewing tobacco Other _____ Not any

Older sibling (s) Cigarettes Chewing tobacco Other _____ Not any

Other family members Cigarettes Chewing tobacco Other _____ Not any

Friends (at least 1 of 4) Cigarettes Chewing tobacco Other _____ Not any

10. Please rank the frequency of tobacco use by your family members and friends? [*✓ any one*]

Father Regularly Occasionally Previously Not at all

Mother Regularly Occasionally Previously Not at all

Older sibling (s) Regularly Occasionally Previously Not at all

Other family members Regularly Occasionally Previously Not at all

Friends (at least 1 of 4) Regularly Occasionally Previously Not at all

11. Did any of your friends ever forced you for using tobacco?

Yes

No

12. If one of your friends offered you a tobacco product, but you don't like to use, how would you react?

13. If one of your friends started using tobacco, how would you motivate him for not using tobacco?

14. During the last year, were you taught or discussed about the dangers of tobacco use in your school?

Yes

No

If yes, Please specify the topic, content and activities

15. Have you been exposed to any pro tobacco advertisement in any media and events during last 30 days?

Yes

No

If yes, List three most influencing pro tobacco advertisements

1. _____

2. _____

3. _____

16. Have you been exposed to second hand smoke in your home and public places in last 7 days ?

At home

- Regularly
- Occasionally
- Never

At public places

- Regularly
- Occasionally
- Never

17. Personal information

Age: _____ years Sex: Boys Girls Last name: _____

Grade/Class: _____ School type: Government Private Other _____

Educational level of

Father:

- Illiterate
- Literate
- Primary Education
- Secondary Education
- Higher Education

Mother:

- Illiterate
- Literate
- Primary Education
- Secondary Education
- Higher Education

REMARKS

THANK YOU FOR PROVIDING INFORMATION

Annex 2: Consent form

TOBACCO USE AMONG SCHOOL ADOLESCENTS OF POKHARA

Instruction sheet for Informed Consent

Dear Students,

I am Deepak Paudel, a Master of Public Health (MPH) Student at Tribhuvan University, Institute of Medicine, Maharajgunj Campus, Maharajgunj, Kathmandu.

As the requirement of the course the course, I am going to conduct a research study on "*Tobacco Use among school adolescents of secondary schools of Pokhara sub metropolitan city*".

Your school has been selected as one of the sample school among all secondary schools of Pokhara. Out of 8th, 9th and 10th grade in this school, your class has been selected randomly. All the students of this class are now eligible for participation in this study.

All the information provided by you will remain strictly confidential. There is not any possibility of disclosing the information by specifying identity, as you need not have to write your name or other identification in the questionnaire. You may not participate in the study if you do not wish to participate or you may quit at any time of filling in questionnaire. Please just indicate, "QUIT" in the top-right margin of the questionnaire in such cases.

A set of questionnaire will be provided to you. You may use pencil or pen to fill up the questionnaire. If you have any difficulty in understanding the questionnaire, you may request me for clarification. I hope that you will be able to fill up the questionnaire within 30 minutes.

1. Do you have any question with me regarding the study?
2. Clarify the queries of students if any
3. Distribute the questionnaire to all students
4. Provide necessary instructions (Use instruction guideline)
5. Allow time to fill up the questionnaire
6. Collect the questionnaire from students
7. Thank all of them for participating in the study

Annex 3: List of sampled schools

I would like to extend sincere thanks to the students and authorities of following schools for their participation and cooperation in this study.

Mr. Bamdev Sharma

Gandaki Boarding School

Lamachour, Pokhara

Mr. Narayan Parajuli

Janapriya Seconary School

Simalchour, Pokhara

Mr. Dev Malla

Hillpoint Boarding School

Matepani, Pokhara

Mr. Raju Gurung

New Millenium Academy

Pardi, Birauta, Pokhara

Mr. Devendra Bhat

Bhadrakali Secondary School

Bhadrakali, Pokhara

Mr. Reshmi Raj Paudel

SOS Herman Miner School

Rambazar, Pokhara

Mr. Hari Adhikari

Bhwani Kalika Secondary School

Gharipatan, Pokhara

Mr. Sambhu Raj Bastola

Shiv Shakti Secondary School

Phulbari, Pokhara

Mr. Kedar Nath Baral

Tal Barahi Secondary School

Baidam, Pokhara

Mr. Somlal Subedi

Bindabasini Secondary School

Batulechour, Pokhara

Mr. Krishna Bahadur Gurung

Kalika Secondary School

Rambazar, Pokhara

Ms. Nirmala Baral

Step By Step Boarding School

Malepatan, Pokhara

Mr. Laxman Thapa

Chhorepatan Secondary School

Chhorepatan, Pokhara

Ms. Pushpa Gurung

Little Step Higher Secondary School

Simalchour, Pokhara

Mr. Nanda Pun

Manakamana Boarding School

Nadipur, Pokhara

Ms. Sheela Thapa

New Modal Boarding School

Nagdhunga, Pokhara

Mr. Nandalal Tripathy

Global Colligate School

Ramghat, Pokhara

Ms. Tara Basnet/Ms. Shanta Ghimire

Amarsingh Higher Secondary School

Amarsingh Chowk, Pokhara