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Prevalence of Tobacco Use and Its Associated Factors Among the Students of Higher Secondary Schools of Lalitpur District

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ABSTRACT

Introduction: Smoking is considered the key preventable risk factor for morbidity and mortality at the global level. The aim of this study were to determine the prevalence of tobacco user and factors associated with tobacco use among the higher secondary students in selected schools in Lalitpur district.

Methods: A cross-sectional study was conducted with 318 students in selected higher secondary schools of Lalitpur district. A standard, self-administered questionnaire adopted from Global Youth Tobacco Survey (GYTS) consisting of questions on socio-demographic variables, tobacco smoking status, family and peer tobacco smoking was administered to participants. Students of class 11 and 12 were included in the study and they were selected by stratified random sampling method. Data were analyzed using binary logistic regression analysis.

Results: The overall prevalence of tobacco smoking was 17.9%, where males smoked at higher rates than females (13.5% and 4.4%, respectively). One fourth of the monthly pocket money was seem to spend on tobacco use (monthly pocket money: 2000 and expenditure on tobacco: 500) Logistic regression analysis showed that tobacco use was associated with age, class, gender, pocket money and alcohol use of the students.

Conclusion: The current tobacco smoking prevalence among higher secondary students was 17.9%. The control of using tobacco products in school students needs to be prioritized. This study help focus on the need of school health nurse for counseling and support for the students who are in need or search for help to give up the tobacco use and for other physical and psychological help.

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KEYWORDS: *prevalence, smoking, students, tobacco use.*

ABBREVIATIONS

FCTC- Framework Convention on Tobacco Control
GYTS- Global Youth Tobacco Survey
IRC – Institutional Review Committee
LNC – Lalitpur Nursing Campus
PAHS – Patan Academy of Health Sciences
SPSS- Statistical package for social science
TTI- Theory of Triadic Influence
WHO -World Health Organization

1. INTRODUCTION

Background of the Study

The World Health Organization (WHO) defines addiction as the state of physiological or psychological addiction to any psychoactive substance; the state is characterized by changes in behavior and other psychological reactions, always including the compulsive need for occasional or regular substance use, guided by the pleasant psychological effect of the substance or avoiding the symptoms of abstinence.[1]

Psychoactive substance include alcohol; amphetamines or similarly acting agents; caffeine; cannabis; cocaine; hallucinogens; inhalants; nicotine; opioids; phencyclidine (PCP) or similar agents; and a group that includes sedatives, hypnotics, and anxiolytics.[2] Nicotine is one of the most highly

addictive and heavily used drugs.[3] Tobacco use include smoking cigarette and bidi (small amount of crushed tobacco, hand-wrapped in dried *tendu* leaves, and tied with string) and smokeless tobacco including chimo, toombak, gutkha, and pan masala.[4]

Globally, tobacco use is the leading preventable cause of death[5], and most adult smokers initiate smoking in adolescence.[6] The tobacco epidemic is one of the biggest public health threats the world has ever faced, killing more than 7 million people a year. More than 6 million of those deaths are the result of direct tobacco use while around 890,000 are the result of non-smokers being exposed to second-hand smoke. Around 80% of the 1.1 billion smokers worldwide live in low- and middle-income countries, where the burden of tobacco-related illness and death is heaviest.[7]

Tobacco use among the youth was found to be in increasing trend in United States(US).

It found that most of the students who used tobacco products used 2 or more tobacco products that includes cigars, smokeless tobacco, hookah, and e-cigarettes.[8] The tobacco use among the youth, in both smoking and smokeless forms, is quite high in the South East Asian region. Smokeless tobacco use is the most common form of tobacco use among boys and girls in Bangladesh. Smokeless tobacco products are easily affordable by the youth due to their low prices. Increasing taxes on tobacco is an effective measure to protect the youth.[9]

One of the reasons for high tobacco use in Nepal could be the creative and targeted marketing strategies of various tobacco companies and its weak regulation. Abundant tobacco production, weak enforcement of tobacco control measures, easy accessibility and affordability of these products are other factors leading to the rise of the epidemic of tobacco use in the youth.[10]

Although the exact burden of tobacco use among the youth has not been studied extensively in Nepal, a national Global Youth Tobacco Survey (GYTS) in 2011 reported that overall 10% of the students ever smoked cigarettes and 20.4% used other tobacco products. It reveals tremendous increase in current other tobacco users from 7.2 % in 2001, 8 % in 2007 to 19.1 % in 2011.[6] The trend of use of tobacco is increasing among students. In 2013, it was found to be 19.7% and in 2016 the prevalence was increased to 25.3%. Some of the factors known to be associated with tobacco use among adolescents are age, gender, having smoker friends or parents,[11] and the amount of pocket money.[12]

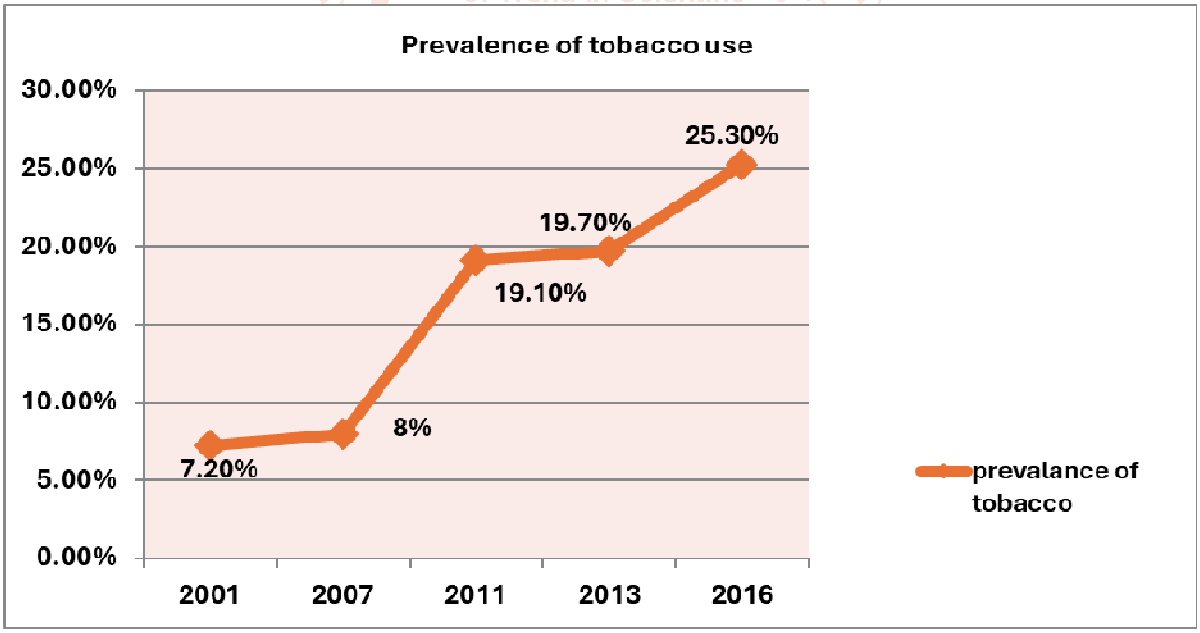


Figure 1: Trends of tobacco use among students of Nepal

The Framework Convention on Tobacco control had been signed by Government of Nepal on 3 December 2003 and ratified by parliament on 7 November 2006. Government had also enforced and implemented the Tobacco Product Control and Regulatory Act 2011, Tobacco Product Control and Regulatory Rule 2012 and Directive for Printing and Labeling of Warning Message and Picture in the Box, Packet, Wrapper, Carton, Parcel and Packaging of Tobacco Product, 2011 in country.[7]

Adolescents are vulnerable group for experimenting with tobacco and adopting the risky health behaviour. There is more prevalence of tobacco use among male than among female adolescents.[12] National GYTS in 2007 reported that more than two-thirds (69.5%) of the students were not refused to purchase tobacco in stores despite

their young age. Provision of unrestricted access to tobacco products in the shops especially to the adolescents and its open use in public places pose a great challenge to the implementation of the regulations of the antitobacco law in Nepal. Fun experience, relieving tension and pressure from friends were the major reasons for initiating tobacco use.[6]

Rationale of the study

A cross sectional study conducted in Pokhara, Nepal, the prevalence of the tobacco use among adolescents was 13.2%. the use of tobacco was significantly associated with tobacco use habit of family members and friends and their exposure to tobacco advertisement.[11] According to a study conducted in Canada, there is 2-5 times higher risk of substance use like alcohol and drug among tobacco user adolescents.[13] Substance using adolescence are more likely to continue tobacco use in adulthood.[14] 70% of premature deaths among adults are due to behavioural patterns that emerge in adolescence including smoking.[15]

Smoking tobacco causes cancer of the lung, larynx, kidney, bladder, stomach, colon, oral cavity and esophagus. It also causes leukaemia, chronic bronchitis, chronic obstructive pulmonary disease, ischaemic heart disease, stroke, miscarriage and premature birth, birth defects and infertility. Evidence was found that 1/3rd of the students exposed to smoking was associated with depression and anxiety .[15]

If we can stop this increasing trend of tobacco among the school students, through identification of associated factors or aggravating factors and its proper management, we can prevent many of these problems so, researcher is interested in conducting this research.

Significance of the study

Many studies concluded, major cause of increase in tobacco use among students are weak anti- tobacco policy, lower level of health awareness, easy availability of tobacco product and attractive advertisement of the tobacco products[8]. We can conduct awareness program on the effects of tobacco in the physical and mental health, academic performance and family relations to the school students.

We can recommend for strict anti-tobacco strategy like no smoking in school boundary or near school, regular monitoring of students for tobacco use, etc in the school. We can recommend for the need of school health nurse for counseling and support for the students who are in need or search for help to give up the tobacco use.

Operational Definitions

- Tobacco use: Use of tobacco in smoke form i.e cigratte, bidi and non-smoke form i.e paan, guthkha, khaini measured by the tool derived from Global Youth Tobacco Survey (GYTS).[16]
- Ever user: Ever user refer to one who had not used any form of tobacco (smoked or chewed) in the past 1 month but had tried in the past. To assess the ever use, participants were asked, 'Prior to the past 30 days, have you ever smoked or chewed tobacco?' An affirmative response to this question was followed-up with questions on type of tobacco used.
- Current user: Current user refer to one who had used any form of tobacco (smoked or chewed) in the past 1 month.
- Higher secondary level students: Students of 11 and 12 grade of government and private higher secondary school of Lalitpur district. It includes 3 schools i.e United Academy, Namuna Machhendra School and Nightingale International School. The students of Science, Management and Humanities of these schools were included in the study.

Theoretical framework

The theoretical framework is based on the Theory of Triadic Influence (TTI).[17] Petraitis, Flay, and Miller (1995) proposed Theory of triadic influence (TTI) to acknowledge numerous behavioral influences especially in substance use dossier. It is organized in a cogent 3 × 3 framework—3 levels of causation and 3 streams of influence.

Level of causation

The TTI categorizes independent variables that predict behavior into three levels of causes: ultimate, distal, and proximal.

Ultimate-level causes are broad and relatively stable, and they are causes that individuals have little control over such as their cultural environment. These causes include politics, food policy, religions, mass media, socioeconomic status.

Distal-level influences are variables affecting behavior that individuals are likely to wield some control over. It includes bonding to parents or deviant role models, and religious participation.

Proximal-level predictors are more immediate precursors to a specific behavior and are under the control of an individual, although still influenced by the distal and ultimate factors. All three levels influence behavior, although the proximal level is usually more directly predictive of specific behaviors.

Streams of influence.

Intrapersonal influences: It includes biological predispositions, such as age, testosterone levels, and personality characteristics including openness to experience, consciousness, extraversion, agreeableness. These intrapersonal variables then have, according to the TTI, direct effects on variables such as self-determination and general skills.

Social influences: It include the strength of the interpersonal bonds with immediate role models, such as teachers and parents, and the relevant behaviors of those role models such as school and teacher quality, parenting practices during one's childhood.

Cultural-environmental influences: It begins with broad cultural characteristics that are largely beyond an individual's control, such as political, economic, religious, legal, mass media, and policy environments.

Finally, these influences form one's attitudes toward a specific behavior eg smoking, etc.

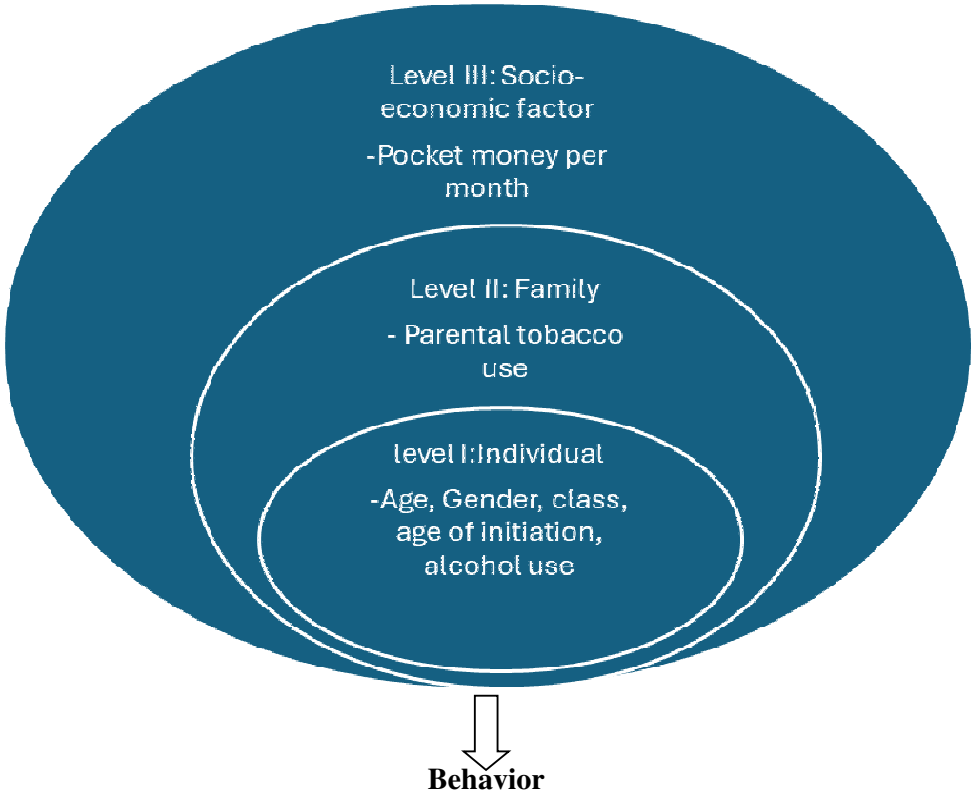


Figure 2: Theoretical framework based on Theory of Triadic Influence (TTI)[17]

Research questions:

1. What is the prevalence of tobacco use among the students of higher secondary schools?
2. What are the associated factors for the tobacco use among the students of higher secondary schools?

2. Review of Literature

Introduction

This chapter include the review of literature related to prevalence of tobacco use and its associated factors among the higher secondary students. Related literature was reviewed thoroughly to gain in-depth knowledge for the study. The literature review was done from primary source which included reports, thesis and electronic search. Electronic search included Google schoolar, Hinari, Pubmed and google. This section of literature review is divided into different parts which explore the literature and previous studies on prevalence of tobacco use and its associated factors among the students of higher secondary schools.

Review of related literature

Prevalence of tobacco use

A cross-sectional observational study was carried out in six co-educational high schools in Kolkata, West Bengal in 2018, among 526 students of 15-19 years to determine the prevalence of smoking and to find out any difference among the smokers and non-smokers regarding factors related to family relations, peer group and personal characteristics. The prevalence of smoking was found to be 29.6%.[18]

A cross sectional study was conducted in Balikesir University, Turkey in 2016 among the 1096 students aimed at investigating smoking prevalence and associated factors among the university students. The prevalence of smoking was 25.5%.[19]

A cross-sectional study conducted in Kalaiya, Nepal using self-administered questionnaire adapted from Global Youth Tobacco Survey to assess tobacco use among the representative sample of 1540 adolescent students selected by stratified random sampling from December 2014 to May 2015. Overall prevalence of 'ever users' of tobacco products was 25.3 %. Prevalence among boys and girls was 31 and 14.4 % respectively.[20]

A cross-sectional survey study was conducted with 264 students of Jahangirnagar University, Dhaka, Bangladesh in 2015 to assess the prevalence of tobacco smoking and factors associated with the initiation of smoking. The prevalence of tobacco smoking was 60.2%, where males smoked at higher rates than females.[21]

A school based cross sectional study was conducted from April 10 to April 15, 2014 in 12 high schools selected randomly from public and private sectors, in Ethiopia. Students [n = 1673] from grade 9-12, in the age limit of 13-19 were included in the study. Data were collected by self-administered questionnaire that is adapted from global youth tobacco survey questionnaire. This study was aiming to assess the prevalence and associated factors of cigarette smoking among adolescents of Ethiopia. The prevalence of cigarette smoking among adolescents were found to be 28.6% ever smokers, and 17.2% current smokers.[22]

A cross-sectional study was conducted among the intermediate and secondary school students in Jazan Region in 2013 among 4100 students. The objectives of this study were to determine the prevalence of and characteristics associated with tobacco smoking and to identify the factors associated with tobacco smoking. The prevalence of ever user was 17.3%, and the current user was 10.7%.[23]

A cross sectional study was conducted in Dubai Emirates in 2010 among 2457 students aged 10-20 years. The aim of the study was to measure the prevalence of current tobacco use and its associated factors among school students in Dubai Emirate. Data were collected with a self-administered questionnaire. Of the total students, the prevalence of tobacco users was 14.6%.[24]

A cross sectional study was conducted among the Secondary and higher secondary schools of Dharan municipality in Sunsari district of Nepal in 2013 among 1312 students. The objectives of the study was to estimate the prevalence of tobacco use and determine associated factors among adolescent students of Dharan municipality. Prevalence of ever use of any tobacco product was 19.7%.[25]

A cross sectional study was conducted in North Jordan in 2005 among the 712 students of Yarmouk University. The objectives of the study was to estimate the prevalence of tobacco use and determine associated factors. A total of 249 students out of 712 reported being smokers. Thus, the prevalence of current smoking students was 35.0% (56.9% among males and 11.4% among females).[26]

Associated factors of tobacco use

A cross sectional study conducted in Myanmar in 2018 among the 2621 of 9-11 grade students. The objective of the study was to monitor trends in tobacco use. 51 schools were selected using random sampling based on probability proportional. The study revealed association of exposure to second hand smoker in home (33.2%) and advertisement of tobacco in television (83.4%) with tobacco use of students.[27]

A cross sectional study was conducted in United states in 2018 among the high school students (n=24658). The purpose of this study was to assess the prevalence of exclusive and concurrent use patterns of tobacco and its associated risk factors among the students. The finding of the study showed tobacco use was significantly associated with male gender, by using flavored products, nicotine dependence, tobacco marketing receptivity and perceived prevalence of peer use of tobacco products.[28]

A school based cross-sectional study was conducted in 2016 among 8th - 12th grade high school students in the Rithepani-2, Lekhnath, Pokhara. The study was designed to provide estimates of tobacco use by school-going adolescents in Lekhnath and to identify risk factors associated with. The findings revealed there was significant

association between prevalence of substances use and cultural acceptance of participants, ethnicity and use of substances by the family members.[29]

A cross-sectional survey study was conducted with 264 students of Jahangirnagar University, Dhaka, Bangladesh in 2015. The aim of the study was to identify prevalence of tobacco smoking and factors associated with the initiation of smoking among University students. The study finding suggested the influence of friends was the most significant reason for initiating tobacco smoking and perception regarding tobacco smoking was significantly related to continuing tobacco use.[21]

A cross sectional survey was carried out by self-administered questionnaire adapted from Global Youth Tobacco Survey to assess tobacco use among the representative sample of 1540 adolescent students selected by stratified random sampling from December 2014 to May 2015 in Kalaiya, Nepal. The objective of the study was to find prevalence and correlates of tobacco use among adolescents in the schools of Kalaiya. The study finding revealed the correlates of tobacco use were: sex, ethnicity, family members and friends using tobacco products, and students exposed at home and public place.[20]

A cross sectional study was conducted in Thailand in 2015 among the 1876 students from 30 schools of grade 7-9. The study aimed at identifying the tobacco use among the Thai students and factors related to tobacco use. The study concluded tobacco use was associated with being older, male, exposed to SHS, in possession of an object with a tobacco logo, and being offered a free tobacco product by a tobacco company.[30]

A school based cross sectional study was conducted from April 10 to April 15, 2014 in 12 high schools selected randomly from public and private sectors, in Ethiopia. Students [n = 1673] from grade 9-12, in the age limit of 13-19 were included in the study. Data were collected by self-administered questionnaire that is adapted from global youth tobacco survey questionnaire. This study was aiming to assess the prevalence and associated factors of cigarette smoking among adolescents of Ethiopia. The study concluded sex, alcohol use, parent smoking, peer smoking, exposure to movie with actors smoking, not being exposed to anti-smoking media messages, not discussing in the class about danger of smoking, and having perception that smoking is not dangerous to health were significantly associated with current cigarette smoking among adolescents.[22]

A longitudinal school-based survey with a baseline sample of 2338 students (9th and 10th graders, mean age 14.7 years) in Hawaii was conducted in 2013 and followed up 1 year later. The 0bjective of the study was to examine the prevalence of tobacco use to find the associated factors and how it ie related to subsequent smoking behavior. The study revealed the age, ethnicity lower parental education higher rebelliousness to be associated with the tobacco use behavior.[31]

A cross sectional study was conducted among the Secondary and higher secondary schools of Dharan municipality in Sunsari district of Nepal in 2013 among 1312 students. The objectives of the study was to estimate the prevalence of tobacco use and determine associated factors among adolescent students of Dharan municipality. The finding of the study revealed tobacco use was associated with late adolescence, male gender, type of school, Janajati ethnicity and receiving pocket money ≥Nepalese rupee 500/month.[25]

A population-based cross-sectional study was conducted during October_November 2011 in the Jhaukhel-Duwakot Health Demographic Surveillance Site (JD-HDSS) located in a peri-urban area near Kathmandu, the capital city of Nepal among 352 respondents of age group 14-16 years. The objective of the study was to find the prevalence of tobacco use and its associated factors among the adolescents. The study revealed tobacco use among the adolescents was associated with smoking by exposure of adolescents to pro-tobacco advertisements, adolescents attending concerts/picnics and smoking by other family members/relatives.[32]

Summary

Most of the study was conducted among the students of class 8, 9, 10. The prevalence of the tobacco use among the students were found to be in the range of 15% to 20% in Nepal. Most of the study concluded the mean age of initiation of tobacco use to be 16.5 years. Tobacco use was found to be associated with the age, gender, class, monthly pocket money, parental tobacco use in most of the study. Some of the study found that there was association of tobacco use with parental occupation, media and advertisement of tobacco, relation with the parents.

Most of the study was conducted among the students rural and peri-urban area of Nepal. The study conducted in urban area to assess the tobacco use among the students could not be found so, through this study I tried to fill the gap in the literature.

3. Methods

Research Methodology

Research methodology is a framework or guide used for the planning, implementation and analysis of the study. This chapter deals with the description of the methods and different steps that were used for collecting and organizing data. It includes research design, study setting, study population, sample size, sampling technique, inclusive criteria, exclusive criteria, instrumentation, ethical consideration, validity and pretesting of the instrument, plan for data collection procedure and analysis.

Objectives:

General objective

- To estimate the prevalence of tobacco use and determine associated factors among the students of higher secondary schools

Specific objectives

1. To assess the prevalence of tobacco use among the students of higher secondary school
2. To determine the associated factors of tobacco use among the students of higher secondary school

Place of study: The study was conducted in Nightingale college (science and management) at Kupondol, United academy (Science, Management and Humanities) at Manbhawan and Namuna Machhindra campus (Management and Humanities) at Lagankhel.

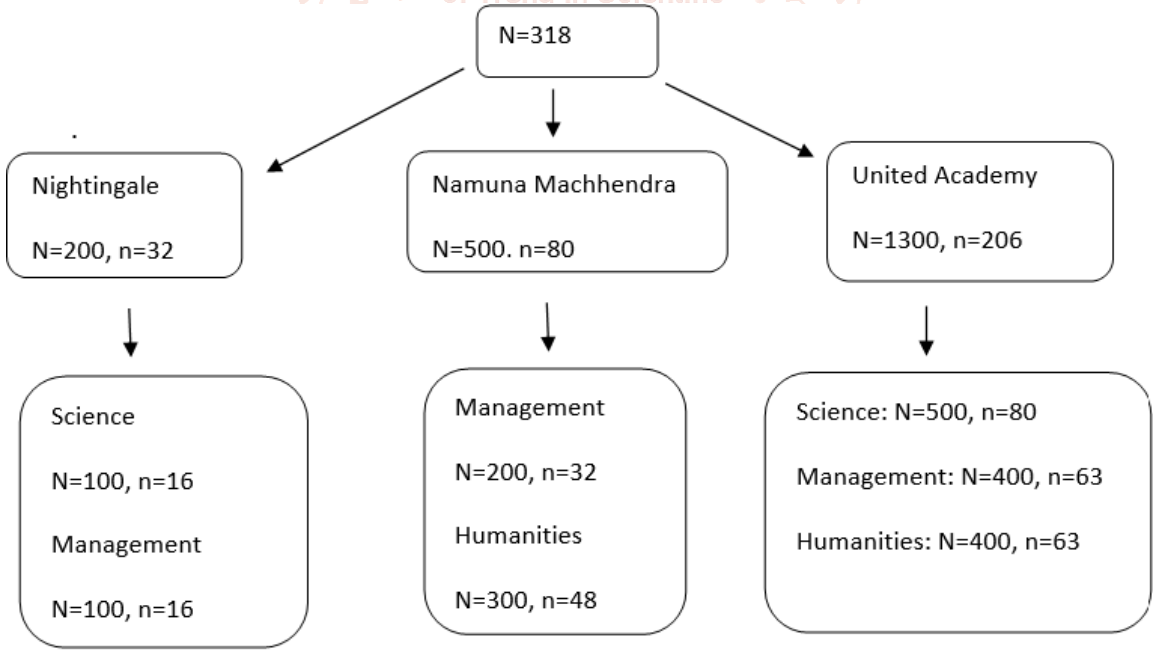
Population for study: All the students of 11 and 12 class of selected higher secondary schools of Lalitpur district

Duration of study: April 2018 to February 2019

Methodology

Design: Cross sectional design was used.

Sampling: 3 higher secondary schools were selected purposively and proportionate stratified sampling was done and different strata was made according to the faculty of the students. In each strata, students were randomly selected through lottery method.



Sample size calculation

Sample size: 318

- Prevalence of tobacco use among students is 25.3%.[20]
- Using the formula,

$n=(Z^2Pq)/d^2$ (Cochran,1977).[33]

Where, Z α/2 at 5% =1.96
p = 25%
q = (100-p) = (100- 25= 75%)

d= Permissible error ie (5%)

therefore, n=(1.96*1.96*25*75)/5*5

n=288

Adding 10% of 288 for sample mortality, sample size=318

Inclusion and exclusion criteria

Inclusion criteria

Students of 11 and 12 class who were willing to participate in the study

Exclusion criteria

Those students who were absent in school at the time of data collection

Instrument

Validity and Reliability

Structure, appropriateness, font size and format of instrument were considered. Face validity of the tool was done consulting the research advisor. It is standard tool developed by WHO, and the reliability was measured in the previous study and the score was 0.69. In this study, reliability was measured by pretesting in 10% of the sample size that was conducted among students of Nobel Academy. The reliability test was done and the Cronbach's alpha score was 0.68.

Data collection tool

Global Youth Tobacco Survey (GYTS) was used for the study. It is a self administered questionnaire. It is a standardized tool developed by WHO and it was modified and used in Nepal in 2013 by Dr. Pranil Man Singh Pradhan, assistant professor at Community Medicine in Institute of Medicine, TU.

It consist of two parts

- Soci-demographic profile: It includes assessment of demographic variables of respondents. It includes age, gender, class, mother's and father's occupation and type of family.
- Tobacco related behavior: it includes 21 items. Item number 10 and 15 is multiple response questions and others are single response questions.

Data collection procedure

The study was conducted after obtaining approval of Patan Academy of Health Sciences (PAHS) Institutional Review Committee, Lalitpur Nursing Campus (LNC) research committee and also from school authority of concerned schools. Objectives of the study was explained to the students. Written informed consent from the respondents was taken. The data was collected from 12th of August 2018 to 7th September 2018. The time for data collection was as per the convenience of school authority and students. The data was collected in break time and in the time when students were not having classes in their own class. Students were randomly selected from each class using lottery method. Briefing was done on the questionnaire before the data collection to the students. Self-administered questionnaire was distributed among the students in their own classroom. Questionnaire took approximately 15-20 minutes. Questionnaire was collected immediately after they were filled by students. Data was collected by researcher herself.

Data processing software

Collected data was checked for its completeness then it was organized, coded and entered into MS Windows Excel in the form of codes. Analysis was performed using Statistical Package for Social Sciences (SPSS) 16 version.

Statistical analysis

The data collected was analyzed by a means of Descriptive (frequency, percentage, mean, median and inter-quartile range) and inferential statistics (logistic regression). Binary logistic regression analysis was used to determine the associations observed in bivariate analysis. Crude and Adjusted Odds ratio (OR/AOR) with 95 % CI was calculated to quantify the associated factors. The response variables, were dichotomiz as 'yes = 1 (tobacco users) and 'no = o (non-users of tobacco).

Ethical consideration:

Approval of the study was obtained from the Research committee of Campus and Institutional Review committee (IRC) of PAHS and also from concerned higher secondary school also. Consent was obtained from all participants. Participants were told they have right to refuse to participate in the study. Confidentiality and

anonymity of the research participants was assured. Respondents were explained about the research detail, its significance, the benefit and harm in the language he/she understands before obtaining the consent, their queries were answered.

4. Results

Introduction

This chapter presents the findings of the study "prevalence of tobacco use and its associated factors among the students of higher secondary school of Lalitpur district". The data was obtained from a total 318 respondents of different schools of Lalitpur district through self-administered questionnaire technique. The obtained data were entered in Statistical Package for Social Science (SPSS) version 16 and analyzed according to the objectives. The respondents socio-demographic information and personal factors were analyzed by using descriptive statistics such as frequency, percentage, mean and standard deviation and median and IQR. The binary logistic regression was used to find the associated factors of tobacco use among the respondents.

The tables in this chapter displays

- Socio-demographic variables
- Prevalence of tobacco use
- Behavior related to tobacco use
- Bivariant and multivariant analysis of tobacco use among the respondents.

Table 1. Socio-demographic characteristics of respondent

N=318

Variables	Frequency	Percentage
Age in years		
Less than or equal to 17	188	59
More than or equal to 18	130	41
Gender		
Male	143	45
Female	175	55
Class		
11	91	28.6
12	227	71.4
Father's occupation		
Business	158	49.7
Service	71	22.3
Farmer	64	20
Labour	22	7
Social worker	3	0.9
Mother's occupation		
Homemaker	218	68.9
Business	58	18.2
Farmer	36	11.3
Service	3	0.9
Social worker	3	0.9
Types of family		
Nuclear	222	69.8
Joint	88	27.7
Extended	8	2.5
Types of program		
Management	138	43.4
Science	100	31.4
Humanities	80	25.2

Mean age: 17.2years (17.2±1)

Table no.1 depicts the frequency and percentage distribution of the demographic variables of the respondents of the selected higher secondary schools. Out of total 318 respondents, majority (59%) of the respondents were of age group, less than or equal to 17. The mean age of the respondents was 17.2 years (17.2±1). Majority of the

respondents participated were female (55%). Among the total respondents nearly, 3/4th of the students were from class 12 i.e 71.4%. The occupation of the respondent's father were business (49.7%), farmer (20%), service including teachers, army, etc (22.3%). Regarding the occupation of the mother of the respondents, more than 2/3rd of them were homemaker (68.6%) and other includes business (18.2%), farmer (11.3%). Regarding the type of family, 69.8% were from nuclear family, 27.7% from joint family and very less from extended family i.e 2.5%. Among the total respondents participated, majority were from management programme i.e 43.4% and 31.4% were from science and 25.2% from humanities programme.

Table 2. Tobacco related characteristics and monthly pocket money of respondents

N=318

Variables	Frequency	Percentage
Alcohol use		
Yes	65	20.4
No	253	79.6
Monthly pocket money		
Less than 2000	147	46.2
More than or equal to 2000	171	53.8

Median monthly pocket: 2000(IQR=1000-3000) #FCTC= Framework Convention on Tobacco Control

The above table depicts that, 79.6% of the respondents reported no use of alcohol by them. The median monthly pocket money of the respondents was Rs. 2000 which provides conclusion that 1/4th of their pocket money was spend on tobacco use by the students.

Table 3. Tobacco related behavior among the parents of respondents

N=318

Variables	Frequency	Percentage
Parental tobacco use		
Yes	91	28.6
No	202	63.5
Don't know	25	7.9
If yes then,(N=91)		
Father only	72	79.12
Mother only	8	8.79
Both	11	12.1

The above table, reflects majority of the respondents reported no use of tobacco by their parents (63.5%) and only 28.6% reported use of tobacco by their parents. Among the tobacco user parents, majority of their father consumed tobacco i.e 79.12%.

Table 4. Prevalence of tobacco use among the respondents

N= 318

Variables	Frequency	Percentage
Tobacco non-users	205	64.5%
Current users	57	17.9%
Ever users	56	17.6%

Table no. 4 represent that out of total 318 respondents, majority of the respondents were tobacco non-users (64.5%) and among the tobacco users, 17.9% of the respondents were current users and 17.6% were ever users of tobacco.

Table 5. Smokeless tobacco using among cigarette smokers

N= 57

Smokeless-tobacco preferred	Frequency	Percentage
Paan masala	26	45.6
Surti	13	22.8
Gutkha	12	21
Marijuwana	8	14.1
Khaini	4	7.1

Multiple response question

Table no 5 depicts, majority of the respondents prefer paan masala (45.6%) in smokeless tobacco followed by surti (22.8%), guthkha (21%), marijuwana (14.1%) and khaini (7.1%).

Table 6. Tobacco related behavior for both cigarette smoking and smokeless tobacco

N=57

Variables	Frequency	Percentage
Usual place for tobacco use		
At friend's home	19	33.33
Public place	16	28.1
Hotel	10	17
Social event	5	8.77
At home	4	7
At school	3	5.26
Source of tobacco		
Bought from shop	41	71.92
Borrowed from other	10	17.54
Stole	3	5.26
From older person	3	5.26
Reason for tobacco use		
For fun	29	50.88
Friend's pressure	16	28
Relieve pain	10	17.54
Advertisement	9	15.78
Use of family member	2	3.5
Want to give up tobacco		
Yes	40	70.17
No	17	29.8
Money spent on tobacco use		
Less than or equal to Rs. 500	37	64.9
More than or equal to Rs. 500	20	35.1

Median of money spent on tobacco: 500 (IQR=500-600)

The above table depicts the current use of tobacco related behavior of both cigarette smoking and smokeless tobacco use. Majority of the respondents usually took tobacco in friend's house (33.33%) followed by in public places (28.1%). Nearly 71.9% of the respondents consume tobacco by buying from shop that is followed by borrowing from others and getting from older person. Most of the respondents reported the use of tobacco due to fun or pleasure experience i.e 50.8%, which is followed by pressure from friends, to relieve pain, advertisement and seeing use of tobacco by family members. The mean age of initiating the tobacco use was 16 years (16±1.5). Majority of the respondents (70.17%) wants to give up the tobacco use and only 29.8% of the respondents reported they don't want to give up the tobacco use since it has became their habit. It was found the median expenditure on tobacco to be Nepalese rupees (NRs.) 500/month (IQR 500–600).

Table 7. Different characteristics of respondents and tobacco use: bivariate analysis

N=57

Variables	Current users n(%)	P value	Unadjusted odd ratio
Age			
Less than or equal to 17	22 (38.5%)	0.022	1
More than or equal to 18	35 (61.5%)		2.11
Class			
11	15 (26.3%)	0.05	1
12	42 (73.6%)		2.33
Gender			
Female	14 (24.6%)	0.000	1
Male	43 (75.4%)		4.40

Age of initiation 14-16 17-20	 34 (59.6%) 23 (40.4%)	0.316	 1 0.77
Pocket money < 2000 ≥ 2000	 24 (42%) 33 (58%)	0.012	 1 1.00
Alcohol use Yes No	 24 (42.1%) 33 (57.9%)	0.00	 1 13.2
Parental tobacco use No Yes Don't know	 33 (57.9%) 14 (24.5%) 10 (17.6%)	0.73	 1 .685 .783

The above table shows, respondents of the age group ≥ 18 are more likely to current use tobacco than that of age group ≤ 17 years (OR: 2.11). Respondents of class 12 are more likely to current use tobacco than that of class 11 (OR: 2.33). Regarding the gender of the respondents, male respondents were 4.4 times more likely to current use tobacco than the female respondents (OR: 4.40). Regarding the age of initiation of tobacco use, those who started at the age of 17-20 years are less likely to current use tobacco than those who started at the age between 14-16 years (OR: 0.77). Regarding the pocket money, there is no significant change in between the pocket money less than 2000 and more than or equal to 2000 (OR: 1.00). Respondents who reported yes and don't know about the parental tobacco use were less likely to current use tobacco than that of non-user parents (OR:.685;.783). The respondents using the alcohol were 13 times more likely to current use tobacco than that of alcohol non-users (OR: 13.2)

Table 8. Association of different variables with tobacco use among respondents: multivariate analysis

N=57

Variables	Adjusted odd ratio (95% CI)
Age Less than or equal to 17 More than or equal to 18	 1 1.24
Class 11 12	 1 1.15
Gender Female Male	 1 3.05
Pocket money < 2000 ≥ 2000	 1 1.00
Alcohol use No Yes	 1 9.72

The above table represent the multivariant analysis of current tobacco use and different variables. Respondents of age group ≥ 18 years were more likely to current use tobacco than that of age group ≤ 17 years (OR: 1.24). Regarding the class, respondents s of class 12 were 1.15 times more likely to current use tobacco than that of class 11. Among the respondents, male respondents were 3 times more likely to current use tobacco than that of female respondents. Regarding the pocket money of the respondents, both the group have same odds.

5. Discussion, Conclusion and Recommendations

This chapter deals with discussion, conclusion, limitations, implications and recommendation of the study. The discussion presents interpretation of the major findings and the results are compared with those of the studies obtained from the literature review. Conclusions are drawn from each of the findings. Recommendations give direction to future research.

Discussion

This study was designed as a cross sectional study to assess prevalence of tobacco use and its associated factors among the students of selected higher

secondary schools of Lalitpur district. A total of 318 were selected randomly. A structured questionnaire was used to collect the socio demographic data. Global youth tobacco survey tool was used which is the standard tool to assess prevalence of tobacco use and its associated factors among the students of higher secondary schools.

Prevalence of tobacco use

The prevalence of current use of tobacco in this study (18%) was more compared with a study from Thailand where prevalence of current use was 15%.[30] The prevalence of ever smokers of tobacco (17.6%) was high compared with national GYTS where 7.9% of students had ever smoked[6]. Regarding the gender of the respondents, prevalence of current use of tobacco was 13.5% in male and 4.4% in female which is comparable to the study conducted in Ethiopia (2014) where prevalence of current users among male were 13.3% and females were 3.8%.[22]

Tobacco related behavior

The mean age for tobacco use initiation (smoking and chewing) in my study was found to be in consistency with studies from Kalaiya[20] and Turkey[19] where the mean ages of onset were 16 years and 16.6 years respectively. Age groups of 14-19 years are more vulnerable to initiation of tobacco use; hence, a target group is highlighted for early intervention to reduce the uptake of this habit. This study has shown that majority of the tobacco users prefer friend's house as their most common location of tobacco use (33.3%) and shops as the most common source (71.9%). Similar results have been obtained in the study from Kerala, India where the most preferred places for smoking were friends' house and public places.[34]

Respondents of more than or equal to 18 years were more likely to consume tobacco compared with those in less than or equal to 17 years. Similar results were seen in a study from Kerala[34] where respondents aged 16 years and above were nearly three times more likely to be tobacco users compared with those who were 13-years (adjusted OR=2.9, CI 1.6 to 5.3). Tobacco use is more common in later adolescence thus cessation attempts need to be focused in these groups. Higher odds of tobacco use existed among boys as compared with girls in this study (OR:3.03). Similar difference of prevalence between males and females was seen in other studies conducted in Nepal[15] and Myanmar[27]. Male respondents were more likely to ever smoke than female participants in a study from western Nepal (adjusted OR=4.0; 95% CI 2.9 to 5.6)[20]. In context of Nepal, teen smoking is viewed as an acceptable behavior for boys but not for girls, especially among the unmarried. However, the rising trend of tobacco use among the girls should not be ignored. Continuing modernization is likely to narrow the gender differences in smoking and is likely to result in high prevalence of smoking among teen girls in Asian countries[20].

In this study, nearly 50.8% of the respondents who use tobacco had tried and quit the smoking in the past and nearly 3/4th of the respondents who use tobacco wanted to stop smoking (70.17%) that is comparable to the study conducted in Thailand[30] (79.4% and 72.2% respectively). This study reported that the pocket money ≥2000 were more likely to current use tobacco than that of pocket money <2000 that is comparable to the study conducted in Turkey[19] (2016) that showed respondents with good economic status had higher smoking rate. However, asking for more pocket money to buy tobacco products could also be the reason behind the significance of the association for which further studies are required.

This study concluded that, the respondents who consume alcohol were nearly 10 times more likely to current use tobacco (OR:9.7) which is similar to the study conducted in Turkey[19] that showed positive correlation between alcohol use and smoking. Another study conducted by Bugdayci et al. reported that alcohol use increases the rate of smoking by 6.1 times.[22] In this study, odds of the current tobacco use among respondents whose parents use tobacco and those respondents whose don't consume tobacco are same so there was no any association between parental tobacco use with current tobacco use of respondents. But the study conducted in Kalaiya, Nepal showed significant association of parental tobacco use and tobacco use of respondents (OR: 20.16).[20]

Conclusion

Tobacco use is prevalent among the students despite the existence of anti-tobacco regulations in the country. Male gender, middle adolescence age, younger age of initiation of tobacco use and alcohol use were significantly associated with current use of tobacco. School based interventions and tobacco education are necessary to prevent initiation and cessation of tobacco use. Legislations related to tobacco control should be enforced to decrease availability, accessibility and affordability of tobacco products. Social norms of tobacco use among parents and others at home as well as at public place should be modified to limit the tobacco use among school students. The control of using tobacco products in school students needs to be prioritized for adolescent health and tobacco control.

Implementations

1. This study highlights the prevalence of tobacco use that exists among the higher secondary

students after the endorsement of antitobacco law in Nepal in 2011.

2. This study will help recommend the concerned authority for strict anti-tobacco strategy like no smoking in school boundary or near school, regular monitoring of students for tobacco use, etc in the school.
3. The findings of this study will help focus on the need of school health nurse for counseling and support for the students who are in need or search for help to give up the tobacco use and also for other physical and psychological help.
4. The finding of the study will help the parents and teachers to identify the factors that helps for initiation and continuous use of tobacco in students and to help the students to give up tobacco and prevent them from initiation in young age.

Limitations

1. The assessment of the tobacco-use status was based entirely upon the response given by the subject believing that false reporting was very unlikely.
2. Sample size of the study was small and limited to selected schools of Lalitpur district only, hence cannot be generalized to the data of Nepal.
3. Only those students were participated in the study who were present in school that day.

Recommendations

1. Further researches are needed to explore the vulnerability of certain age groups towards tobacco use to generate an effective awareness campaign.
2. Further research can be conducted to assess the awareness about ill effects of tobacco use in health
3. A descriptive study can be conducted to assess the awareness regarding the tobacco control program and its correlation with the tobacco use.

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