

# Prevalence of Tobacco Smoking and Associated Factors among High Students at Misha District, Southern Ethiopia

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## Abstract

**Background:** Globally, tobacco smoking has a great health impact among youths especially in developing countries. There is limited data on the smoking habits of high school students in developing countries. Smoking behavior in high school students is increasing and it has a significant effect on smoking practice of the future generations. The aim of this study was assessed of prevalence of tobacco smoking and associated factors among high school students Misha district, southern Ethiopia.

**Objective:** The aim of this study was to assess prevalence of tobacco smoking and associated factors among high school students in Misha district southern Ethiopia; moreover, it will furnish important directions for intervention and prevention of smoking among the students in high schools in Misha district.

**Methods:** A school based cross-sectional study was conducted among high school students in Misha district southern Ethiopia from March 01 to April 30, 2017. Multi stage sampling technique was used to select 352 study participants. Data was collected using pre-tested and structured self-administered questionnaire. The data was entered in to Epi-data version 3.1 and analyzed using SPSS version 24. In addition, of descriptive statistics for describing data and multivariate logistic regression analyses was used to identify associated factors.

**Results:** Three hundred fifty-two students were participated in the study. The prevalence of current smoking among high school students was 11.1% (95% CI: 8.0, 14.5). The odds of smoking in males were higher as compared to females (AOR=2.5; 95% CI: 1.0, 6.2). Having smoking mothers were more likely to smoke compared with their counterparts (AOR=3.6; 95% CI: 1.6, 8.0); also having smoking fathers were more likely to smoke compared with students who haven't smoking fathers (AOR = 3.2; 95% CI: 1.4, 7.3). The students having smoking sisters were more likely to smoke compared with their counterparts (AOR = 3.3; 95% CI: 1.5, 7.6). This study also found that the khat chewing practice was three folds increases the odds of current cigarette smoking among parents. (AOR = 3.0; 95% CI: 1.6, 6.2; 95% CI: 1.2, 4). Those, who having smoking peer were more likely to smoke compared to those do not have smoking peers. (AOR = 2.6; 95% CI: 1.2, 6.0)

**Conclusion and Recommendations:** This study found that a prevalence of current smoking practice in Misha district southern Ethiopia is high. In addition, this study revealed that high school students` Current tobacco smoking is significantly associated with male sex, having smoking parents, having smoking sisters, khat chewing practice and having smoking peers. These factors should be thought for further prevention and control of smoking among high school students. Moreover, families of the students should be strongly prohibited their use of tobacco by strongly legislating law of the countries against tobacco use.

**Keywords:** Tobacco smoking • Prevalence • Associated factors • High school students

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## Introduction

Globally, there are billion smokers, but majority of smokers are in developing countries. Any type of tobacco taken by its users is deadly. Now days, there is significant number of smokers in middle and high school students. A prevalence of tobacco use is increasing in Africa as Latin America and Asia countries. Smoking is the single most known preventable cause of death in many countries. Tobacco use is a major public health concern and one of the strongest lifestyle behaviors associated with the risk of cardiovascular disease (CVDs). According to WHO estimation 4.9 million deaths occurred a year due to tobacco smoking, this figure will be more than double by 2030 if action isn't taken today. The use of tobacco products during adolescence increases the risk for adverse health effects and lifelong nicotine addiction.

Different findings in Ethiopia showed that the prevalence of tobacco smoking is alarmingly increasing among high school students and that the proportion of female smokers is increasing. At this time, tobacco is extensively used up among high school students in Ethiopia. Despite such a great impact of high school students smoking, previous studies in the country gave due emphasis for tobacco smoking on specific age groups such as people in prison, old peoples and students in university and college levels., youths, town. While, magnitude of high school students smoking or associated factors in the district level set among high school students in Ethiopia as well as in the study area was not well studied [1]. This study aimed to assess the magnitude of tobacco smoking and associated factors among high school students in the district given that tobacco use is preventable, that initiation occurs primarily during youths.

## Materials and Methods

### Study setting

A school based cross sectional was conducted to assess prevalence and predictors tobacco smoking behavior among high school students in Misha district southern Ethiopia from March 01 to April 30, 2017. This study site is 248 kilometers away from the capital city of Ethiopia, Addis Ababa and 192 km from Hawassa which is capital city of SNNPR. It is bounded by Siltie zone in the north, Gibe and Gombora districts in the west, and in the east Kembata zone. Misha district is one of the eleven districts found in Hadiya zone. According to 2017 census, the district has a total population of 171,675 and 35,035 households. There are 7 governmental high schools in the district with a total of 10,000 students during the study period.

### Sample procedure

The sample was calculated by using single population proportion formula. The sample was calculated by taking current prevalence of tobacco smoking among high school students of southern Ethiopia which was 17.2%. By using  $P$  of 17.2%,  $q=1-0.172=0.828$ , at 95% CI,  $z =1.96$  and marginal error of 5%=0.05, since the sampling technique was multi-stage, design effect of 1.5 was used, after adding 10% for non-response rate a total of 360 students were required. Students were selected by using multistage sampling techniques from urban and rural high schools at Misha district. At first stage: two and two

high schools were selected from urban and rural high schools respectively by using simple random sampling. Then after, at the second stage, high schools were stratified by grade levels. The lists of students in each selected grade levels were identified. The total sample size of 360 was distributed for selected grade levels proportionally. Finally, by using Simple Random Sampling the final samples were taken from the registrar list of all students in their specific classes.

### Measurement

Data was collected using a pre-tested structured self-administered questionnaire. Also, seven Health professionals (4 Bachelor degrees and 3 diplomas) were selected for Data collection and two supervisors were assigned. Two days training was given for data collectors. The lists of final sample including the names of grade levels, identification number and random number were prepared for each grade levels and given to supervisors and data collectors. To reduce information contamination and responder induced bias questionnaires was administered at same time to selected grade levels by using simple random sampling. Next, the questionnaire was pre-tested on 5% of the sample (18 students) before the actual data collection days in unselected high schools in the district. A Smoking questionnaire was adapted from globally well tested questionnaires sources and also, other related literatures were considered to assess factors associated with smoking [2]. It is a standardized international questionnaire with carefully chosen questions to assess tobacco use and also enable comparison of data across settings.

Current Smoking status was measured through asking respondents using questions: have you smoked cigarettes within 30 days preceding this data collection ", those students answering 'Yes' to the question are classified as current smoker and those students answering 'No' classified as a current non-smoker for further analysis.

**Family smoking status:** The respondents answering 'Yes' to the question 'did your father/mother/sister and brother smoke in your lifetime?' were considered to have had a family smoking history in their life time.

**Peer smoking status:** The respondents answering 'Yes' to the question 'Does your close friend/relatives smoke?' were considered as to currently having a smoking best friend/relatives.

### Data processing and analysis

Data were cleaned, coded, explored for outliers and missed values. Then data entry template was prepared and entered on EPI data version 3.1. Descriptive analysis was done such as percentages, frequency distributions and mean and measures of dispersion (SD) was used for describing data. For further analysis, smoking status recoded in to for Current smokers and for Current Non-smokers. Data were analyzed using SPSS version 24 and Proportions and 95% confidence intervals were obtained as estimates of prevalence. Associations between independent and dependent variables were analyzed first using bivariate analysis to identify factors which are associated with tobacco use. Then Multiple logistic regression was applied using enter method with  $p < 0.05$  and  $p > 0.25$  criteria to enter and exit from the model respectively. The magnitude of the association between the different independent variables in relation to

dependent were measured using odds ratios and 95% Confidence Interval (CI) and P values below 0.05 were considered statistically significance. Hosmer-Lemshow goodness-of-fit was applied to find the appropriateness of model.

### Ethical consideration

Ethical clearance was obtained from the Institutional Review Board (IRB) of Jimma University College of health sciences. Permission letter was obtained from the Misha district after the objectives of the study was explained. Verbal consent was sought from selected students to confirm willingness to participate in the study before the interview. Privacy and confidentiality was ensured throughout the process of the study. The study participants were ensured that refusal to consent or withdrawal from the study would not alter or put at risk their access to health care.

## Result

### Socio-demographic characteristics

Three hundred fifty-two participants were included in this study with a response rate yielding (98%).The majority of the respondents 237(67.3%) were of age group 20-24 years. One hundred eighty-nine (53.7%) were males. The average age of respondents was 21.6 years (range 15 to 29 years) (Table 1).

Variables	Frequency	Percent
Age of students (in years)		
15-19	68	19.3
20-24	237	67.3
25-29	47	13.4
Sex		
Male	189	53.7
Female	163	46.3
Grade level		
9th grade	57	16.2
10th grade	109	31
11th grade	103	29.3
12th grade	83	26.3
Ethnic group		
Hadiya	211	60
Gurage	60	17
Kembetta	42	12
Amhara	23	6
Silte	16	5
Religion		
Protestants	220	62.5
Orthodox	97	27.6

Muslim	30	8.5
Catholics	5	1.4
Household head		
Father	245	69.6
Mother	107	30.4
Educational level of household head		
Illiterate	42	11.9
Read and write	74	21.1
Elementary school	124	35.2
Secondary and above	122	31.8
Occupation of household head		
Farmer	149	42.3
Merchants	94	26.7
Government employee	90	25.6
House wife	19	5.4

**Table 1:** Socio-demographic characteristics of the respondents in high schools students, in Misha district, southern Ethiopia.

### Tobacco smoking behavior

In this study prevalence of current smoking was 38(11.1%) and ever smoking was 80(22.8%). To fun with friends was main reason for smoking of adolescents. Twenty (51%) of the smokers consumed tobacco on average for 4-6 days per week (Table 2).

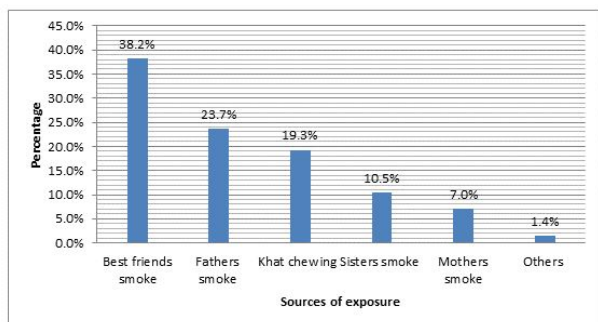
Variables	Frequency	Percentage
Ever smokers (n=352)		
Males	59	16.8
Females	21	6
Current smokers		
Males	31	8.8
Females	8	2.3
No of sticks smoked per a smoked day (n=39)		
2-4 cigarettes	22	54.6
5-6 cigarettes	17	45.4
Frequency of smoking		
4-6 Days	20	51
1-3 Days	19	49.1
Got cigarette most often from		
From street	12	30.8
From nearby shop	17	43.6
Others	10	25.6
Brand of cigarette smoked		
Niyalla	22	56.4

Roth man	5	12
Locally prepared tobacco	12	31.6
Reasons given for smoking		
To achieve some goals	15	38.5
To have fun with friends	19	48.7
To reduce boredom feeling	5	12.8
Other substance using behavior:		
Khat chewing( among current smokers) (n=39)		
Sometimes	25	64.1
Always	11	28.2
Never	3	7.7
Alcohol drinking (among current smokers) (n=39)		
Sometimes	18	46.2
Always	16	41
Never	5	12.8

**Table 2:** Cigarette smoking behavior of the respondents among high school students, in Misha district, southern Ethiopia.

**Source of exposures to tobacco smoking**

In this study, one hundred thirty-four (38.2%) of best friends, 83(23.7%) of fathers and 68(19.3%) of khat chewers were currently smoking tobacco (Figure 1).



**Figure 1:** Source of exposures to tobacco smoking among high school students in Misha district, southern Ethiopia.

**Factors associated with tobacco use**

Binary logistic regression analysis was used to identify the association of predictors with current smoking of tobacco. All variables associated with current tobacco smoking in the binary logistic regression with a p-value ≤ 0.25 logistic regressions by using the backward method were male, age, religion, educational level of household head, grade level, having smoking father, having smoking mother, having smoking peer, having smoking sisters, khat chewing, evaluation of tobacco use consequences and knowledge of tobacco use consequences. Those variables with P-value <0.25 in bivariate analysis were entered into multivariate analysis using multiple logistic

regressions in order to predict factors associated with current use of tobacco. Accordingly, male, parental smoking, having sisters smoking, Khat chewing practice, having smoking peers were seen significantly associated with current tobacco use among high school students [3].

In this study the result indicated that males had higher odds to use tobacco as compared to females. (AOR 2.5; 95% CI: 1.0, 6.2). This study revealed the odds of students who having smoking mother were more likely to use tobacco than counterparts (AOR 3.6; 95% CI: 1.6, 8.0). Likewise, students having fathers smoking were more likely to use tobacco than those who have no smoking fathers' (AOR 3.2; 95% CI: 1.4, 7.3). The students having their closest friends smoking were more likely to use tobacco than their counterparts (AOR 2.6; 95% CI: 1.2, 6.0). The participants having Khat chewing practice were also 3.0 times more likely smoked than those who didn't chewing (AOR 3.0; 95% CI: 1.9, 5.8). The odds of having smoking sisters was 3.3 times more likely to use tobacco than those who have no smoking sisters (AOR 3.3; 95% CI: 1.5, 7.6) (Table 3).

Current use of Tobacco					
Variables		Yes	No	COR (95%CI)	AOR(95% CI)
Sex	Male	31	158	4.6(2.3,9.2)	2.5 (1.0,6.2)*
	Female	8	155	1	1
Mothers smoking	Yes	16	9	5.2(2.8,9.3)	3.6(1.6,8.0)*
	No	23	304	1	1
Fathers smoking	Yes	29	54	4.4(1.6,5.0)	3.2(1.4,7.3)*
	No	10	259	1	1
Khat chewing	Yes	22	46	5.2(2.8,9.4)	3.0(1.9, 5.8)*
	No	17	267	1	1
Sisters smoking	Yes	23	14	4.5(1.6,5.0)	3.3(1.5,7.6)*
	No	16	299	1	1
Best friends smoking	Yes	37	97	5.6(3.6,12.8)	2.6(1.2,6.0)*
	No	2	216	1	1

**Table 3:** Factors associated with cigarette smoking among high school students, in Misha district, southern Ethiopia.

**Discussion**

The main objective of this study was to assess the prevalence of cigarette smoking and associated factors among high school students in Misha district. Accordingly, this study revealed that the prevalence of current smoking was 11.1%. Accordingly, male, parental smoking, having sisters smoking, Khat chewing practice, having smoking peers were strong predictors of current cigarette smoking among high school students.

The prevalence of tobacco smoking is increasing in spite of the fact that copious scientific researchers had informed a morbidity and mortality problems allied with it. This study showed that the prevalence of current smoking among high school students was 11.1% (95% CI: 8.0, 14.5). This finding was in line with the study conducted at Cameroon (11.2%), Southern Ethiopia (17.2%), Sudan (13.6%) and southwest Bangladesh (15.7%). The result of the present study is relatively lower than the prevalence from many countries globally. However, it is higher than the study conducted at Nigeria (7.5%), and Malaysia (6.8%).

This study was tried to assess the reasons for smoking of students. The majority, (48.7 %) of students smoked to have fun with friends, (38.5%) of them smoked to reads their readings and (12.8 %) of them smoked to reduce boredom feelings. This finding was supported by studies conducted in Bangladesh, Ethiopia, Kenya and Nigeria.

This study reported that khat chewing practice was 3 folds raise the odds of smoking among current smokers (AOR=3, 95% CI: 1.9, 5.8). Similar results were reported from studies conducted at Misirak Badewecho district, southern Ethiopia and Jimma [4]. This relation between smoking and chewing khat might be due to the need to increase satisfaction from multiple substance use, increase excitement and to relieve from stress. Therefore, the percentage of smokers was high among khat chewers. In the current study, it is indicated that male students are more likely to use tobacco than female students (AOR = 2.5; 95% CI: 1.0, 6.2). The difference among male and female students might be explained by the socio-cultural or religious background of the countries. Furthermore, familial relationships, including care and family related activities may protect females from involving in tobacco use.

Many reviewed studies have shown that students whose parents are smokers have higher odds to use tobacco than those adolescents whose parents are not smokers. According to Bandura's social cognitive learning theory, youths get their beliefs in smoking from role patterns, especially if friends' and parents' were smokers. From this point of view, it is supposed that having contact with friends and parents who smoke, makes special beliefs in the person and that belief directs him to misuse of tobacco products. This study discovered that the odds for a respondents smoking cigarettes if the father also smoke was 3.2. (AOR = 3.2; 95% CI: 1.4, 7.3). Also students who have smoking mothers were 3.6 folds more likely to smoke than their counterparts (AOR=3.6; 95% CI: 1.6, 8.0). Consistent findings were reported from other studies conducted in Nigeria, Bangladesh, Malaysia, Doula Cameroon and Malay. This study also showed that having smoking sister was 3.3 folds increases the odds of current cigarette smoking among students (AOR=3.3; 95% CI: 1.5, 7.6). This is in line with other studies conducted in Nigeria and India. The possible reason for this result might be socio-cultural, socio-economic and the strength level of family bonds. Having a smoking close friend was associated with participants' own smoking (AOR=2.6; 95% CI: 1.2, 6.0). Different studies done in Ethiopia and abroad also reported the similar findings. Having a friend who smokes not only influences the onset of smoking but also is a strong predictor of continuing the habit in adulthood. The development of nicotine dependence and smoking habit is linked to social influence of family and friends. People usually adjust their act of habit (behavior) on ways like their models did through vicarious

reinforcements [5]. This was elaborated by "social cognitive theory (observational learning). The impact of this association is much greater than the impact of smoking family members. This should be give due attention for consideration in attempts to prevent smoking initiation or continuation.

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## Limitation and Strength of the Study

In fact, as the study has employed, self-reporting as a proxy measure for the study of current smoking status, it is liable to self-report bias which can underestimate the prevalence of the smoking under study. Underreporting could happen because of social desirability bias prone. The finding of this result should recognize these limitations. In spite of these limitations, the current study has strengths such as; yielding high response rate, the coverage of men and women students, and the involvement of both rural and urban schools and questionnaires were adapted from standardized sources. Furthermore, triggers for initiation age of smoking and some of the social impacts on smoking were studied among high school students.

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## Conclusion and Recommendations

In conclusion, this study found that considerably high prevalence of self-reported current cigarette smoking among high school students in the Misha district. Furthermore, the current study revealed that tobacco smoking is strongly associated with male, having smoking parents, having smoking sisters, khat chewing practice, and having smoking peers. Putting in consideration of public health priority, government should strengthen Frame Work Convention for Tobacco Control against the tobacco related health burdens.

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## Ethics and Consent

The study was performed by interviewing the high school students after an ethical consent was obtained from Jimma University ethical clearance committee and individual verbal consent is obtained from the study participants and schools. Written informed consent was obtained from parents for participants under 16 years old. This manuscript has never been submitted and considered for publication to any other journal.

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## Availability of Data and Materials

Data and materials will be available upon request. You can contact Mr. Abate Lette and Mr. Tilahun Ermeko if you want the data and materials at any time.

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## Competing Interests

Have no any competing interest and all authors have approved the manuscript for publication.



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## Authors' Contributions

All authors have equal contribution to the manuscript. The authors have read and approved the final version of the manuscript to be submitted for publication.

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