# Study of Pattern of Tobacco Use and Perceived Health Problems Among Residents of Hilly Area of Eastern Region of Nepal

*Sah RB,[1] Pradhan B,[2]Subedi L,[3] Karki P,[4] Jha N[5]*

[1]Associate Professor, School of Public Health and Community Medicine, BPKIHS, Dharan, [2] Professor, Dept. of Internal Medicine, BPKIHS, Dharan, [3]Senior Instructor, School of Public Health and Community Medicine, BPKIHS, Dharan, [4] Professor & Head, Dept. of Internal Medicine, BPKIHS, Dharan, [5] Professor & Chief, School of Public Health and Community Medicine, BPKIHS, Dharan

**Corresponding Address:** Dr. Ram Bilakshan Sah, School of Public Health & Community Medicine, B. P. Koirala Institute of Health Sciences, Dharan, Nepal; Email: bilaksah@yahoo.com

## ABSTRACT

Smoking accounts for 8.8% of annual deaths worldwide. About 73% of these smokers are in developing countries with overall prevalence in Nepal ranging from 25% to 73% in adult men. The objective of the study is to measure the prevalence of disease among tobacco consumers and to find out the association between patterns of tobacco use with reported health problems in the last one year among residents of Dhankuta municipality. The cross-sectional study was conducted among residents of Dhankuta municipality where 205 households were taken as subjects. Pretested semi-structured questionnaire was administered and face to face interview was conducted. Chi-square test was applied to find out the association between socio-demographic characteristics and pattern of tobacco use with reported health problems in the last one year. Among 205 individuals, almost 117 (57.1%) were found to be consuming tobacco. Overall prevalence rate of diseases in last one year was found to be 14.6%. The highest prevalence of diseases was recorded in those who were illiterate (25%) ($P<0.05$). The disease rate in the last one year was higher (20.5%) among tobacco consumers than among non-consumers (6.8%) ($P<0.05$). Respondents smoking more than 20 years and more than 20 sticks per day suffered from diseases, significantly ($P<0.001$). Overall prevalence rate of disease was found to be high among residents of Dhankuta municipality. The female in gender, terai caste and Dalit in ethnicity, lack of education have suffered from the diseases. People smoking more than 20 sticks per day and since 20 years or more suffered significantly more from diseases.

**Keywords:** Eastern Region, health problems, hilly area, Nepal, Residents, Tobacco use

## INTRODUCTION

Smoking is practiced by about a third of the world's population, aged 15 years or older. About 73% of these smokers are in developing countries. Globally 48% of men smoke whereas for women it accounts 22% in developed countries and 9% in developing countries. Almost six million people die from tobacco use each year, both from direct tobacco use and second-hand smoke. By 2020, this number will increase to 7.5 million, accounting for 10% of all deaths.[1] Smoking is responsible for 90% of all lung cancers, 75% of chronic bronchitis and emphysema and 25% of cases of ischemic heart disease. Forty-seven percentage of male cancer deaths and 14% of female cancer deaths are attributable to smoking.[2]

Nepal has a very high prevalence rate of chronic obstructive lung disease (COLD) varying from 20-40% in persons above the age of twenty years. This was found to be significantly associated with tobacco smoking.[3] Acute respiratory infection is the second biggest killer of infants and children in Nepal and positive correlation between tobacco smoking by parents and ARI in infants have been shown in a study conducted in Nepal.[4] Tobacco smoking has also been found to be associated with coronary artery disease in a hospital-based study in Nepal.[5] Therefore, this study was designed to measure the prevalence of diseases in the last one year and to find out the association between pattern of tobacco use with reported health problems in the last one year among residents of Dhankuta municipality.

## MATERIAL AND METHODS

The cross-sectional study was conducted from July 2014 to April 2015 among the residents of Dhankuta municipality of Nepal. Dhankuta is located in the eastern geographical region of Nepal. This research was based on random selection of the study area Dhankuta municipality. A national survey in India revealed that the prevalence of tobacco use was 33% (Khan S *et al* in India in 2013),[6] more than that 45% (Karki YB *et al* Nepal in

2002),[7] and highest 52.07% (Zahiruddin QS *et al* in India in 2011).[8] So taking lower value 33% of prevalence of tobacco use, sample size was calculated at 95% CI and 80% powers then it became 205 persons aged above 17 years. There are 9 wards in Dhankuta Municipality. Among 9 wards, 5 were randomly selected. The list of households of five selected wards was prepared and equal number of households (41) from each ward was selected on the basis of simple random sampling.

Ethical clearance was taken by Institutional Ethical Review Board of BP Koirala Institute of Health Sciences, Dharan, Nepal. Participants were first explained the purpose of the study, its implications and assurance about the confidentiality of the information provided was given to the participants. Name of the individuals or participating group was not disclosed after the study. Written permission was taken from concerned authority (head of house) and the participants of the study. Those individuals who were available after three visits and willing to give written consents were included in the study. Pre-tested semi-structured questionnaire was administered to the study subjects in the presence of investigator and face to face interview was conducted. The collected data was entered in MS Excel 2000. The quantitative data was analyzed using Statistical Package for the Social Sciences (SPSS) software package. Prevalence and odds ratio was calculated, chi-square test was applied to find out the association between socio demographic characteristics and pattern of tobacco use with reported health problems (disease) in the last one year. The probability of occurrence by chance is significant (P< 0.05 with 95% confidence interval)

## RESULTS

Among 205 study population, almost 117 (57.1%) were found to be consuming tobacco. Overall prevalence rate of diseases in the last one year among tobacco consumers in residents of Dhankuta Municipality was found to be 20.5%. The rate of diseases among Dalit, Kirati and Terai caste was significantly higher than other ethnic groups i.e., Brahmin/ Chhetri and Janajati. Regarding occupation, prevalence of diseases was found to be significantly higher in others group including students, abroad, labor, tailor, carpenter than other occupational groups (P<0.001) (Table 1).

**Table 1**. Association between socio demographic characteristics with diseases in the last one year among tobacco consumer (N=117)

| Characteristics | Suffered from diseases in last one year | | Total | P- value |
|---|---|---|---|---|
| | Yes | No | | |
| Age : 17-40 years | 6 (7.9) | 70 (92.1) | 76 | <0.001 |
| 41-59 years | 15 (44.1) | 19 (55.9) | 34 | |
| ≥ 60 years | 3 (42.9) | 4 (57.1) | 7 | |
| Gender : Male | 8 (11.6) | 61 (88.4) | 69 | 0.004 |
| Female | 16 (33.3) | 32 (66.7) | 48 | |
| Religion : Hindu | 18 (17.5) | 85 (82.5) | 103 | 0.027 |
| Others (Buddhist, Christian, Muslim) | 6 (42.9) | 8 (57.1) | 14 | |
| Ethnicity : Brahmin/ Chhetri | 5 (10.0) | 45 (90.0) | 50 | <0.001 |
| Kirati | 8 (50.0) | 8 (50.0) | 16 | |
| Janajati | 5 (12.5) | 35 (87.5) | 40 | |
| Dalit | 3 (60.0) | 2 (40.0) | 5 | |
| Terai caste | 3 (50.0) | 3 (50.0) | 6 | |
| Education of respondents : Illiterate | 10 (25.0) | 30 (75.0) | 40 | 0.225 |
| Below SLC | 9 (25.7) | 26 (74.3) | 35 | |
| SLC and above | 5 (11.9) | 37 (88.1) | 42 | |
| Occupation of respondents : | | | | <0.001 |
| Service | 5 (16.7) | 25 (83.3) | 30 | |
| Business | 0 (0.0) | 22 (100.0) | 22 | |
| Farmer | 10 (37.0) | 17 (63.0) | 27 | |
| Housewife | 0 (0.0) | 20 (100.0) | 20 | |
| Others (students, abroad labor, tailor, etc) | 9 (50.0) | 9 (50.0) | 18 | |
| Economic status : | | | | 0.194 |
| Below poverty line(<1.25 US$) | 14 (17.3) | 67 (82.7) | 81 | |
| Above poverty line (≥1.25 US $) | 10 (27.8) | 26 (72.2) | 36 | |
| **Total** | **24 (20.5)** | **93 (79.5)** | **117** | |

SLC: School Leaving Certificate

**Table-2:** Association between pattern of tobacco use and diseases in the last one year (N=205)

| Characteristics | Suffered from diseases in last one year | | Total | Odds Ratio | P- value |
|---|---|---|---|---|---|
| | Yes | No | | | |
| Consume tobacco (N=205) | | | | | |
| Yes | 24 (20.5) | 93 (79.5) | 117 | 3.53 | 0.006 |
| No | 6 (6.8) | 82 (93.2) | 88 | | |
| Total | 30 (14.6) | 175 (85.4) | 205 | | |
| If consume tobacco, then what form (n=117) | | | | | |
| Smoking | 11 (22.9) | 37 (77.1) | 48 | | 0.361 |
| Chewing | 4 (12.1) | 29 (87.9) | 33 | | |
| Both | 9 (25.0) | 27 (75.0) | 36 | | |
| Total | 24 (20.5) | 93 (79.5) | 117 | | |
| Duration of your habit till now (n=117) | | | | | |
| <10 years | 0 (0.0) | 43 (100.0) | 43 | | <0.001 |
| 10-20 years | 9 (22.0) | 32 (78.0) | 41 | | |
| >20 years | 15 (45.5) | 18 (54.5) | 33 | | |
| Total | 24 (20.5) | 93 (79.5) | 117 | | |
| If smoking then (n=84) | | | | | |
| Filtered | 15 (23.1) | 50 (76.9) | 65 | | 0.069 |
| Unfiltered | 0 (0.0) | 8 (100.0) | 8 | | |
| Both | 5 (45.5) | 6 (54.5) | 11 | | |
| Total | 20 (23.8) | 64 (76.2) | 84 | | |
| If smoking then number of sticks per day (n=84) | | | | | |
| <10 | 6 (11.8) | 45 (88.2) | 51 | | <0.001 |
| 10-20 | 6 (26.1) | 17 (73.9) | 23 | | |
| >20 | 8 (80.0) | 2 (20.0) | 10 | | |
| Total | 20 (23.8) | 64 (76.2) | 84 | | |
| Number of packets (chewing tobacco) per day (n=69) | | | | | |
| <2 | 13 (21.7) | 47 (78.3) | 60 | 0.78 | 0.121 |
| 2-5 | 0 (0.0) | 9 (100.0) | 9 | | |
| Total | 13 (18.8) | 56 (81.2) | 69 | | |
| How many times per day consume tobacco per day (n=69) | | | | | |
| <10 | 8 (19.5) | 33 (80.5) | 41 | 1.12 | 0.863 |
| 10-20 | 5 (17.9) | 23 (82.1) | 28 | | |
| Total | 13 (18.8) | 56 (81.2) | 69 | | |
| If no consume tobacco, then ever consume (n=88) | | | | | |
| Yes | 0 (0.0) | 14 (100.0) | 14 | 1.09 | 0.270 |
| No | 6 (8.1) | 68 (91.9) | 74 | | |
| Total | 6 (6.8) | 82 (93.2 ) | 88 | | |

**Table 3**. Distribution of study population by ever consume tobacco

| Characteristics | Frequency | Percent |
|---|---|---|
| If no consume tobacco, then ever consume (n=88) | | |
| Yes | 14 | 15.9 |
| No | 74 | 84.1 |
| If ever consume, then duration of consumption (n=14) | | |
| <10 years | 11 | 78.6 |
| 10-20 years | 3 | 21.4 |
| Why you leave tobacco consumption (n=14) | | |
| Self interest | 9 | 64.3 |
| Old age | 5 | 35.7 |
| When you leave tobacco (n=14) | | |
| <10 years | 11 | 78.6 |
| 10-20 years | 3 | 21.4 |

## DISCUSSION

Smoking is responsible for considerable number of morbidity and mortality in the world. It is one of the most important preventable risk factor of most non communicable diseases. Every year tobacco causes 8.8% i.e. 4.9 million deaths worldwide.[9] Smoking has been associated with many negative health effects and quitting smoking helps to reduce the risks of developing later health problems.[10] Prevalence rate of disease among tobacco consumer in Dhankuta Municipality was found to be significantly higher (20.5%) than non-consumer (6.8%) ($P<0.05$). The respondents consuming tobacco have four times higher chances of having health problems (diseases) as respondents not consuming tobacco (OR=3.53). Similar study conducted by Poudel S et al in Dharan Municipality, Nepal revealed that there is also significant association between smoking status and existing health problems ($p<0.01$).[10] This is consistent with another study conducted by Pandey MR in Kathmandu, Nepal which showed that smokers were nearly twice as likely to suffer from health problem compared to non-smokers.[11]

Most of the smokers had health problems like cough, troubled breathing, early tiredness etc. during the course of smoking; also they felt that these problems are related to smoking.[10] These findings are consistent with findings of a study[12] which depicted that smoking is associated with suboptimal self-perceived health and health problems. Next, we determined that physical risk like bad cough, trouble breathing, and bad breath correlates negatively with susceptibility to smoking (OR < 1, $p<0.001$), a finding that concurs with earlier US studies at risk of initiating smoking.[13] A study showed that Nepal has high prevalence rate of health problems from 20-40% in persons above the age of 20 years, this was found to be significantly associated with tobacco smoking.[10] The fact that the effect of tobacco increased with age corroborates the findings of one of the earlier studies in India[14] but our study showed positive effect of tobacco with increasing age up to 59 years and after that it is slightly decreased.

This study showed the effect of tobacco was significantly higher (33.3%) among female than male (11.6%). Similar studies carried out in Colombia,[15] and India,[16] the percentage of health problems was higher in women who were smokers. But WHO (1997) showed that deaths due to tobacco was higher among male (12%) than female (6%).[17] This indicated that the gender may or may not play role in effect of tobacco. Generally, the increased mobility of the male increases the risk of tobacco among them, while female have expose tobacco and smoke also from cooking fuel during preparation food more often than males. The rate of health problems was higher in respondents who had illiterate and below School Leaving Certificate (SLC) than SLC and above but difference was not significant. But some studies was showed significant association of smoking with educational level.[18,19] Education is a relatively stronger predictor than household wealth, both among men and women. It is likely that less educated people are less aware of the health hazards of tobacco consumption, and more likely to have higher degree of fatalism or higher overall risk taking behaviour.[20]

Tot *et al*. study also showed that cigarette smoking was higher in the high income group.[21] Since it is thought that high family income might have a facilitating effect in reaching the harmful substances, this finding appears to be an expected result. However, income was expected to cause a more profound on tobacco use and the fact that this finding was not determined in our study may be due to the limited number of subjects who reported the effect of tobacco.This study showed strong association between long duration of exposure to tobacco use and health problems ($P<0.001$). The risk of developing tobacco-related diseases increases proportionally with the consumption of tobacco products and the length of the smoking period.[22] More than half of the smokers had been continuously smoking for more than 20 years. Health problems was higher among smokers and smokeless tobacco users.[23]

This study showed strong association between dose of smoking (number of sticks per day) and health problems ($P<0.001$). Study conducted by Poudel S *et al* in Nepal revealed that people who smoked more frequently were more frequently users of medication for cold symptoms compared with non-smokers,[10] it is similar with a study[24] which reported that frequently smoking among both sexes and all age group was significantly associated with perceived health problems more. The Cancer

Association of South Africa, reports that most people who smoke more than 20 cigarettes a day have some degree of emphysema, a disease that slowly destroys the air sacs in the lungs, impairing their ability to expand and contract.[25]

Our study did not showed association between ever consume and health problems. The another study showed that majority of the former smokers had quitted smoking due to health problem followed by advice from the health personnel.[10] this finding is consistent with the study[26] which reported that experiences of chest pain, suffering from cardio vascular disease and respiratory diseases had influenced quitting attempts. This is a community based cross-sectional study, therefore, it has some limitations like there is obvious recall bias of illness for one-year period. Second, due to possible concern about negative social image, we hypothesized that study participants may have underreported their smoking habits, a circumstance that occurs more commonly among females than males.[27]Overall prevalence rate of disease was found to be high among those consuming tobacco in residents of Dhankuta Municipality. The female in gender, terai caste and Dalit in ethnicity, lack of education, and poor occupation like farmer have suffered more from the diseases. The people those smoking more than 20 years, smoking more than 20 sticks per day were suffered significantly more from diseases. Therefore, this study highlights the urgent need for strategies to increase awareness about harmful consequences of tobacco consumption and possible preventive measures among the general population in order to prevent chronic disease.

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