# Epidemiological Study of Tobacco Smoking Behaviour amongst Residents of the Hill Region of Nepal

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## ABSTRACT

**Background**

Tobacco use is still a serious public health problem in the world and represents a major cause of morbidity and mortality in most parts of the world.

**Objective**

To measure the prevalence of tobacco use and to identify the factors associated with tobacco use among the residents of Dhankuta Municipality.

**Method**

The cross-sectional study was conducted among the residents of the Dhankuta Municipality where 205 households were taken as subjects. Pretested semi-structured questionnaire was used for data collection and face to face interview was conducted. Univariate and multivariate logistic regression was used to see the association between various factors and tobacco use and identify the predictor variables.

**Result**

Overall prevalence of tobacco consumption in Dhankuta Municipality was found to be 57.1%. Prevalence of tobacco consumption among the male was significantly higher (67%) than female (47.1%) (p<0.05). Most of the respondents (56.4%) started consuming tobacco due to peer pressure and for recreation (24.8%). The multivariate logistic regression showed that the people with illiterate have higher chances of consuming tobacco than above School Leaving Certificate (OR 38.395, 95% CI=3.209-459.417). The respondents below poverty line (<1.25 US$) was consuming tobacco more than above poverty line (≥1.25 US $) (OR 6.814, 95% CI= 1.255-36.986).

**Conclusion**

The aims of this study was to measure the prevalence of tobacco use and to identify the factors associated with tobacco use among the residents of the Dhankuta Municipality. We conclude that the prevalence rate of tobacco consumption in the Dhankuta Municipality was found to be moderately high. Factors like male in gender, Brahmin/Chhetri in ethnicity, lack of education, poor occupation like farmer and housewife, poor economic status were associated with tobacco use.

## KEY WORDS

*Epidemiological study, residents, tobacco smoking behavior*

## INTRODUCTION

Tobacco use is one of the leading preventable causes of premature death, disease and disability around the world.[1] An estimated 4.9 million deaths occurring annually can be attributed to tobacco use. If current trends continue, there will be one death every three seconds by the year 2030 i.e. tobacco will be responsible for 10 million deaths per year, by the decade 2020 to 2030, with 70% of them occurring in the developing countries and 80% premature deaths in developing countries.[2,3]

Specifically, smoking rates also remain high in the European Union (EU), especially in Central and Eastern Europe¬an countries, in particular, data from 2012 showed that 24.6% of Italian men and 17.2% of women were daily cigarette users.[4,5]

In Nepal, chronic non-communicable diseases account for 42% of all the deaths.[6] This rate may be due to a high prevalence of current daily tobacco users among men and women aged 17 years and above which was 48.5% and 24% respectively.[7] A study from eastern Terai reported a prevalence of 12.9% and 14.1% respectively for cigarette smoking and smokeless tobacco use.8 Various studies have reported prevalence ranging from 20% to 72% in different populations of Nepal.[8-10] Therefore this study was designed to measure the prevalence of tobacco use and to identify the factors associated with tobacco use among the residents of the Dhankuta Municipality.

## METHODS

The cross-sectional study was conducted from 1st July 2014 to 30th April 2015 among the residents of the 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 revealed that the prevalence of tobacco use was 33%,[11] more than that 45% in Nepal and highest 52.07% in India.[12,13] 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 17 years and above. Tobacco use is the use of cigarettes, bidi, surti, khaini, pan masala and gutkha in smoking, chewing or sniffing form even once.[14] There are nine wards in Dhankuta municipality. Among nine wards, five wards were randomly selected. The list of households of five selected wards were prepared and equal number of households (41) from each wards were selected on the basis of simple random sampling.

Ethical clearance was taken from institutional ethical review board of BP Koirala Institute of Health Sciences, Dharan, Nepal. Written consent 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. Available after three visits means the households were selected on the basis of house no. provided by the Dhankuta municipality. Selected households were followed up to three visits and in the case of unavailability next households were taken.

Pretested semi-structured questionnaire was used for data collection and face to face interview was conducted. Tobacco use was taken as the dependent variable and socio-demographic variables, smoking habit, its initiation, duration of exposure, reasons for smoking, factors that influence their habit, taking other substance with smoking, parents smoking, their perception about tobacco use is injurious to health, suffered from any disease in last one year and aware of the harmful consequences of tobacco consumption were taken as independent variables.

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 disclose after the study.

The collected data was entered in Microsoft (MS) Excel 2000. The quantitative data was analyzed using Statistical Package for the Social Sciences (SPSS) software package. The prevalence was calculated, Chi-square test was applied to find out the association between sociodemographic characteristics and tobacco use. Univariate and multivariate logistic regression was used to see the association between various factors and tobacco use and identify the predictor variables. The probability of occurrence by chance is significant if $p < 0.05$ with 95% Confidence Interval.

## RESULTS

Overall prevalence rate of tobacco consumption in the Dhankuta Municipality was found to be 57.1%. Prevalence of tobacco consumption among the male was significantly higher than female ($p < 0.005$). The higher prevalence of tobacco consumption was seen among those who were illiterate than below School Leaving Certificate (SLC) and above SLC ($p < 001$). Regarding respondents occupation, tobacco consumption rate was found to be higher in farmer followed by housewife, Service and business ($p < 0.001$) (Table1).

Most of the respondents started consuming tobacco due to peer pressure and for recreation. Tobacco consumption increases in common situation like other group including habit, love alone, leisure time and stress. Most of the parents of respondents were smoking (Table 2).

The results of the multivariate logistic regression analysis are shown in Table 3. Among the demographic factors, being a male, lack of education, poor occupation like farmer and housewife, lack of money were associated with tobacco use. Among predisposing factors knowledge about harm of tobacco use was protective for tobacco use.

**Table 1.** Association between sociodemographic characteristics and tobacco consumption

| Characteristics | Tobacco consumption | | Total | P-value |
|---|---|---|---|---|
| | Yes | No | | |
| **Age** | | | | |
| 17-40 years | 76(54.3) | 64 (45.7) | 140 | 0.464 |
| 41-59 years | 34(64.2) | 19 (35.8) | 53 | |
| ≥ 60 years | 7(58.3) | 5 (41.7) | 12 | |
| **Gender** | | | | |
| Male | 69(67.0) | 34 (33.0) | 103 | 0.004 |
| Female | 48(47.1) | 54 (52.9) | 102 | |
| **Religion** | | | | |
| Hindu | 103(56.9) | 78 (43.1) | 181 | 0.894 |
| Others (Buddhist, Christian, Muslim) | 14(58.3) | 10 (41.7) | 24 | |
| **Ethnicity** | | | | |
| Brahmin/Chhetri | 50(67.6) | 24 (32.4) | 74 | 0.015 |
| Kirati | 16(55.2) | 13 (44.8) | 29 | |
| Janajati | 40(48.2) | 43 (51.8) | 83 | |
| Dalit | 5(38.5) | 8 (61.5) | 13 | |
| Terai caste | 6(100.0) | 0 (0.0) | 6 | |
| **Education of respondents** | | | | |
| Illiterate | 40(83.3) | 8 (16.7) | 48 | <0.001 |
| Below SLC | 35 (47.3) | 39 (52.7) | 74 | |
| SLC and above | 42(50.6) | 41 (49.4) | 83 | |
| **Occupation of respondents** | | | | |
| Service | 30(48.4) | 32 (51.6) | 62 | <0.001 |
| Business | 22(43.1) | 29 (56.9) | 51 | |
| Farmer | 27(93.1) | 2 (6.9) | 29 | |
| Housewife | 20(62.5) | 12 (37.5) | 32 | |
| Others (students, abroad, labor, tailor, carpenter) | 18(58.1) | 13 (41.9) | 31 | |
| **Economic status** | | | | |
| Below poverty line(<1.25 US$) | 81(63.8) | 46 (36.2) | 127 | 0.013 |
| Above poverty line(≥1.25 US$) | 36(46.2) | 42 (53.8) | 78 | |
| **Total** | 117(57.1) | 88 (42.9) | 205 | |

SLC: School Leaving Certificate

**Table 2.** Factors for initiating and maintaining tobacco use (N=205)

| Characteristics | Frequency | Percent |
|---|---|---|
| **Consume tobacco (n=205)** | | |
| Yes | 117 | 57.1 |
| No | 88 | 42.9 |
| **Age of start consuming tobacco (n=117)** | | |
| <15 years | 54 | 46.2 |
| 15-25 years | 43 | 36.8 |
| >25 years | 20 | 17.1 |
| **What form you started consuming tobacco at first (n=117)** | | |
| Smoking | 59 | 50.4 |
| Chewing | 38 | 32.5 |
| Both | 20 | 17.1 |
| **Why you started consume tobacco(n=117)** | | |
| Peer pressure | 66 | 56.4 |
| Recreation | 29 | 24.8 |
| Adult smoker in family | 22 | 18.8 |
| **Duration of your habit till now (n=117)** | | |
| <10 years | 43 | 36.8 |
| 10-20 years | 41 | 35.0 |
| >20 years | 33 | 28.2 |
| **Common situation of tobacco consumption increases (n=117)** | | |
| Group | 32 | 27.4 |
| Workload | 24 | 20.5 |
| Family problem | 19 | 16.2 |
| Others (habit, love alone, leisure time, stress) | 42 | 35.9 |
| **Take other substance with smoking (n=117)** | | |
| Alcohol | 46 | 39.3 |
| Pan parag | 28 | 23.9 |
| Cannabis | 43 | 36.8 |
| **Parents smoke (n=205)** | | |
| Yes | 105 | 51.2 |
| No | 100 | 48.8 |

## DISCUSSION

Tobacco use appears as a social determinant which has the potential to cause early death of millions of people every year. Regarding the global burden of disease due to tobacco use has a potential that cannot be neglected.[15] Overall prevalence rate of tobacco consumption in our study was found to be 57.1% which is similar to the study conducted in Mahottary District of Nepal (57.1%).[16] But studies conducted in Belgaum city, India showed prevalence of tobacco use (14.5%) and in Chennai city, South India (21%) which are lesser than our study.[17,18] The cause may be that parts of Nepal are more backward and tobacco use may be part of their culture as compared to other countries.

The fact that use of tobacco increased with age corroborates the findings of one of the earlier studies in India and elsewhere due to the addictive nature of the habit.[19,20] But our study did not show the association between tobacco use and age. A plausible explanation for such a trend may be due to cohort effect, i.e. smoking habit is less likely to be adopted in old age.

The current study showed the tobacco use was significantly higher among male than female (p<0.05). Gender is a statistically significant predictor for tobacco use in this study. This finding is consistent with other findings of high proportion of male tobacco user.[21] A survey conducted

**Table 3.** Factors associated with tobacco consumption: results of multivariate logistic regression.

| Variables | Tobacco consumption | | | |
|---|---|---|---|---|
| | | | 95% C.I. for OR | |
| | P-value | Odds ratio | Lower | Upper |
| Gender (Male) | <0.001 | 191.87 | 17.431 | 2111.971 |
| Ethnicity (Brahmin/ Chhetri) | 0.018 | 27.507 | 1.757 | 430.674 |
| Ethnicity (Kirati) | 0.313 | 0.260 | 0.019 | 3.565 |
| Ethnicity (Janajati) | 0.600 | 0.548 | 0.058 | 5.178 |
| Education of respondents (Illiterate) | 0.004 | 38.395 | 3.209 | 459.417 |
| Education of respondents (Below SLC) | 0.053 | 0.198 | 0.038 | 1.024 |
| Occupation of respondents (Service) | 0.367 | 3.027 | 0.273 | 33.548 |
| Occupation of respondents (Business) | 0.443 | 2.375 | 0.261 | 21.634 |
| Occupation of respondents (Farmer, Housewife) | 0.023 | 28.744 | 1.596 | 517.55 |
| Economic status (Below poverty line (<1.25 US$) | 0.026 | 6.814 | 1.255 | 36.986 |
| Tobacco use is injurious to health (yes) | 0.001 | 0.025 | 0.003 | 0.21 |
| Are you aware of the harmful consequences of tobacco consumption (yes) | <0.001 | 0.015 | 0.003 | 0.065 |

by Siziya et al. in Punjab was also noted that tobacco use was more prevalent among males compared to females.[22] There are less female smokers than males, especially in developing countries, probably related to the social norm that has been long formed in many societies.

The present study showed the prevalence of tobacco use was significantly higher whose education was illiterate than below SLC, and SLC and above (p<0.001). Economic variable also showed the association with tobacco use (p<0.05). Our finding of the association of lower education and being from the poorest wealth quintile with a higher use of tobacco accords with findings from India and Nepal.[23,24] This may be due to the different sociocultural milieu in which they live. The lesser educated people may not be aware of the health hazards of tobacco use and social acceptance of tobacco use may have predisposed them to tobacco smoking and chewing habits. There is very little or no implementation of information, education and communication activities (IEC) about health hazards in Nepal. This may be due to the lack of enforcement of comprehensive and strict tobacco control measures in Nepal though the government has ratified the Framework Convention for Tobacco Control (FCTC) in 2006.[25]

Most of the respondents in our study started consuming tobacco due to the peer pressure and recreation. Another studies also showed most of the people started consuming tobacco because of peer pressure, and for entertainment.[26,27] Wang et al. reported that peer influence proved to be the most significant and consistent predictor of smoking.[28]

This study showed most of the people smoking with alcohol (39.3%) and Cannabis (36.8%). In Orak et al. study, reported that the people were using alcohol (15%), in Turkey (16.5%) which are lower than our study.[29,30] A study carried out in Mersin, Turkey revealed that the people use cannabis was 5%, in Turkey (5.9%) which are lower than our study.[31,32]

These substances have a high addiction potential and they are illegal, we think that being exposed to these substances even once still creates an important risk that should not be neglected. Another major point to be considered is that there may be an underestimation of the prevalence of substance use, because it is illegal in Nepal.

Majority of respondent's parents in this study were smoking. Study conducted by Suryawanshi et al. in India, in which also most of the parents were smoking.[33] Another study showed Parental smoking is main reason for the high tobacco users.[34]

The results of the logistic regression model showed that the independent factors determining tobacco use was lack of education. Those people who had better knowledge of health risks of tobacco use was less likely to have tobacco use. Similar observations were made from Indonesia, and Argentina.[35,36] Therefore, it may be beneficial to introduce lessons on health risks of tobacco at community people.

Limitation of this study includes the cross-sectional nature of data which precludes from drawing causal inferences. Tobacco use, specially smoking, is sometimes associated with social stigma. Therefore, some of the individuals may under-report their smoking habits. Further, data were based on self-report, which might be subject to recall bias, and biochemical verification was not used to assess smoking status.

## CONCLUSION

The aims of this study was to measure the prevalence of tobacco use and to identify the factors associated with tobacco use among the residents of the Dhankuta Municipality. We conclude that the prevalence rate of tobacco consumption in the Dhankuta Municipality was found to be moderately high. Factors like male in gender,

Brahmin/ Chhetri in ethnicity, lack of education, poor occupation like farmer and housewife, poor economic status were associated with tobacco use. Weaknesses of this study includes the cross-sectional nature of data which precludes from drawing causal inferences. Tobacco use, specially smoking, is sometimes associated with social stigma. Therefore, some of the individuals may under-report their smoking habits. Further, data were based on self-report, which might be subject to recall bias, and biochemical verification was not used to assess smoking status. This study highlights the urgent need for strategies to increase awareness about harmful consequences of tobacco consumption. Campaigns create awareness by both the government, the local media and the health systems combinely can do to improve the level of awareness and discourage practices that predispose to tobacco consumption as health workers, media workers and teachers were the major sources of information on tobacco consumption.

## ACKNOWLEDGEMENT

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