"Influence of Education and Occupation on Smokeless Tobacco Use among Male Adults in India and its selected states"
Ramu

International Institute for population Sciences

Govandi Station Road, Deonar

Mumbai-400088 (india)

Email add:-ramu.iips@gmail.com

Abstract: - This paper is an effort to analyze the influence of education and occupation as critical determinants to using smokeless tobacco among male adults in India and its selected states. By using the Global Adult Tobacco Survey (GATS), India, 2009-10 data the study presents a distinct picture of tobacco use among male adults for different background characteristics. The treatment of Bi-variate and Multivariate (Cox proportion hazards model) analysis in the study evidently suggest that majority of Indian male adults are using *Khaini* and *Gutkha* (Local names for tobacco). The analysis also shows that education and occupation are two critical predictors of use of smokeless tobacco. The states of backward region have higher use of smokeless tobacco compared to the developed states in India. Hence, there is an urgent need to minimize this gap between different regions and other subgroups to ensure an overall growth environment for all citizens in the country.

Key Words: - Smokeless tobacco, Male, *Khaini*, Education, Occupation, Region, State

Introduction

Tobacco use is one of the leading preventable causes of morbidity and mortality in the world (WHO, 2001). It is estimated that at least 4.9 million deaths occur annually due to tobacco and the figure is expected to rise to about 10 million by 2030 (Ravenholt, 1990). This means that tobacco will cause more deaths in the next 30 years than malaria, tuberculosis, maternal and major childhood diseases all together and 70 percent of these tobacco related deaths are expected to occur in the developing countries. Tobacco use usually starts in adolescence and continues into adult life, meaning that much tobacco's future victims are today's children.

Tobacco consumption is very harmful for health. Causation premature death occurred through smoking related illness such as lung cancer and cardiovascular disease. Tobacco is also responsible for substantial heath care costs and lost productivity due to illness and premature death (WHO, 2001). In developing countries, smoking estimated to cause over 90 percent of lung cancer men about 70% lung cancer among women, in these countries 56 percent. Global tobacco is responsible for the death of 1 in 10 adult (about 5 million deaths each year) with 2.41 million death in developing counties and 2.43 million in developed countries (WHO, 1997). Eighty percent death due to chronic, respiratory disease and 22 percent of cardiovascular death are attributing to tobacco. The attributed mortality is greater in males (13.3 %) than females (3.8 %). Globally the attributed fraction for mortality due to tobacco smoking were about 12 percent for vascular disease 66 percent for cancer of the trachea, bronchus and lung cancers combined and 38 percent chronic respiratory disease (WHO, 1997).

Tobacco use is socially accepted in many segments of Indian society. Tobacco use in India is increasing but there are considerable changes in the types and methods by which it is used. According to WHO estimates, 194 million men and 45 million women use tobacco in smoke or smokeless form in India. Among these 3.84 million deaths were among men. The leading causes of death from smoking were found to be cardiovascular disease, chronic obstructive pulmonary disease and lung cancer. Half of the unnecessary deaths due to tobacco occur in the middle age groups. According to Global Adult Tobacco Survey (GATS) 2010, 60 percent of tobacco users in India currently use only smokeless tobacco and an additional 15 percent are mixed users, that is, they use both smokeless tobacco and smoked tobacco. Ccurrently there are 274.9 million tobacco users in the age group of 15 and above. Among them, 197 million are males and 77.9 million are females and 216 million tobacco users from rural areas and 58.8 million from urban areas. GATS India estimates the number of daily tobacco users to be 231.9 million (167.7 million males and 64.2 million females). The number of adult daily tobacco users in India is almost equal to the population of Indonesia, which is the fourth most-populated country in the world. In addition to these 231.9 million daily tobacco users, there are 43.0 million tobacco users who use tobacco occasionally.

The government of India enacted 'Cigarettes and other Tobacco Product (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003 (COTPA)' to prohibit the consumption of cigarettes and other tobacco products, which are injurious to health, with a view to achieve improvement of public health in general, and also to prohibit the advertisement of, and provide for regulation of trade, commerce, production, supply and distribution of cigarettes and other tobacco products in the country. Various provisions of this Act have been enforced since 1st May 2004. The Smoke-free Rules were revised in October, 2008, redefining 'public places' so as to include all workplaces and authorizing personnel responsible for enforcement of law for maintaining smoke-free public places across the country (GATS, 2009-10). In Indian context people use tobacco in different forms like smoking tobacco use as Cigarettes, Bides, and Paper rolled tobacco, Chutes, Cigar, Hukkah, Chillam, and others. Other forms of tobacco use is smokeless such as Betel quid, *Khaini*, *Surti*, Snuff, Arecanut, *Mava, Gul*, Panmasala, dry tobacco and others.

Literature review

Tobacco is a major avoidable cause of illness and premature death in low income countries. There was an estimated 4.83 million premature death attributed to smoking in 2000, 12 percent of the total global adult mortality. If the current smoking pattern continues, it will cause some 10 million deaths each year by 2020. In south Asia, chewing tobacco is a major cause of oral cancer (Flora, 2012).

The health effects of smokeless tobacco have been studied extensively in most parts of the world. However, cigarette smoking is not the only predominant form of tobacco use in countries such as India and Bangladesh, where over one-third of tobacco users consume tobacco in the smokeless form (Gupta and Ray, 2003). The prevalence of smokeless tobacco use in India is the highest in the world (GATS, 2009-10). Among Native American from Canada to Brazil, tobacco was widely smoked for its intoxicating effects as a medicinal and for ceremonial purpose. The spread of tobacco use from the new world gave rise to the first great drug controversy of global dimensions. From the onset, opinion regarding tobacco differed radically (World Development report, 1993).

Tobacco and health- the total social cost of tobacco products exceed the direct outlay on them, owing to morbidity mortality and negative externalities associated with the consumption of tobacco products. The cast inflicted by tobacco consumption extend much beyond the direct user to cover secondary smoker as well as non user and are spared over a period much beyond the period of actual consumption of tobacco. The direct cost of tobacco consumption in India, aggregating to around 2-3 percent of the total private final consumption expenditure (PFCF) in the economy over a long period of time is more or less on percent with the total private final expending on health care and medical services (Reddy and Gupta, 2006).

Molecular epidemiological examinations have provided evidence that oral cancer susceptibility is also mediated by genetic and epigenetic factors. Although betel quid chewing is clearly established as the main risk factor for oral cancer, only a small proportion of betel quid chewers develop significant lesions, suggesting the presence of inherited differences in the genes of enzymes which detoxify or Intervention studies for primary prevention of oral cancer in India by Gupta *et al*. have been very enthusiastic (Gupta, *et al*.1991).

According to Global Adult Tobacco Survey (2009-10) near about one of the population (35 percent) of adult in India use tobacco in some form, 21 percent of adults use only smokeless tobacco, 9 percent only smoke tobacco and 5 percent smoke as well as use smokeless tobacco. Tobacco use is high (18 percent) even among population age 15-24. Prevalence of tobacco use decreases with increase in education among both males and females. Most of current smokers and smokeless tobacco users use tobacco every day. Prevalence of tobacco use is higher among rural (38 percent) than urban (25 percent) population. Khaini or tobacco lime mixture (12 percent) is the most commonly used tobacco product in India. Two in every five daily tobacco users age 20-34 started using tobacco before attaining 18 year age. One fourth of females initiate tobacco usage before the 15 year age. Three in every five daily tobacco users use tobacco within half an hour after waking up. One in every eight ever daily smokers has completely stopped smoking. One in every twenty ever daily users of smokeless tobacco has stopped using smokeless tobacco.

To date, however, there are few studies that have focused on knowledge and beliefs about smokeless tobacco use in India. Psychosocial studies of smokeless tobacco use are important in that they can identify key predictors of behaviour change, for example, quitting and intentions to quit, as they have been important in research conducted on smoked tobacco. The aim of the present study was to examine knowledge and beliefs about the harms of smokeless tobacco and intentions to quit among a sample of current adult smokeless tobacco users from the 2006 International Tobacco Control Policy Evaluation (ITC) India Pilot Study Survey (Ravenholt, 1990). Chewing tobacco is a risk factor for oral cancers (Critchley *et al*., 2003). The annual incidence of oral cancer in men in India is estimated to be Regardless of how tobacco is consumed, its adverse influence on disease and mortality among individuals and populations is clear (Hirayama, 1966).

Need for the study

 To the date numerous researches has been carried out on the tobacco consumption in all around the world. However, very few studies have explained the influence of education and occupation on tobacco consumption in India, a country designated as second largest consumer of tobacco product in the world. Tobacco consumption in India is 35 percent and expected to grow by the rate of 2-3 percent per annum by 2020 (WHO, 2003). The consumption of tobacco in various

forms is a major threat to public health. In India, around 1 million deaths each year are due to consumption of tobacco. Smokeless tobacco and *bidi* smoking are the most prevalent forms of tobacco use in India. Tobacco is also a major risk factor for non communicable diseases, which are on the rise in the country. Thus, there is a need to enhance our concern regarding tobacco usage being leading and unbearable cause of death in the country. There is a strong evidence to link tobacco use with the incidence of cancer (GATS, 2009-10). Smokeless tobacco is etiological factor in cancer of the mouth, lip, tong and pharynx and India has one of the largest rates of oral cancer all around the world. In addition with awful effects on health, tobacco usage poses a large socio-economic burden and environmental hazards. It also imposes economic burden on health care system of the country as it force the health facilities to spend their greater share of resources on treating largely preventable diseases.

Objectives:

The main objectives of this study are as follows.

1. To study level, pattern, differentials of smokeless tobacco use among males adults by their educational and occupational background characteristics in India and its selected states.

2. To examine the influence of education and occupation pattern on smokeless tobacco use.

Data & Methodology

Sources of Data

Present study has utilized the Global Adult Tobacco Survey, India (GATS, India), which was conducted by International Institute for Population Sciences, Mumbai in 2009-10. The survey is the global standard for systematically monitoring adult tobacco (smoking & smokeless) and tracking key tobacco control indicator. This is the only large scale survey, which gives the information on smokeless tobacco as well as provides details on socio-economic characteristics of respondents. The Global Adult Tobacco Survey was carried out in 29 states and 2 Union territories of Chandigarh and Pondicherry of the country and covered about 99 percent of the total population. The major objectives of the survey were to obtained estimates of prevalence of tobacco use. Global Adult Tobacco Survey India was conduct in the 2009-10 as a household survey of person age 15 year and above. A total of 69,296 interviews were completed among which 33,676 and 35,529 were of male and female respectively. Out of all completed interviews 41,825, interviews were conduct in rural area and 27,471 interviews in urban areas.

Methodology

Bi-variate and multivariate analysis has been carried out for the analysis. Major concern of this study is to find out the prevalence of smokeless tobacco usage and to study the influence of educational and occupation on the same. In this study, only those seven states have been chosen which shows the prevalence of smokeless tobacco above than the national average. Cox proportional survival model has been used to examine the influence of education and occupation on smokeless tobacco use in India. In the present study education has been categorised as 'no formal schooling', less than primary', primary but less than secondary' and 'secondary and above' and occupation has been grouped as 'employee with salary and wages', self employed', 'student', 'retired or unemployed'. In addition with education and occupation, other socio-

economic and demographic characteristics such as sex, age and region has been considered as the independent variables. Smokeless tobacco consumption has been used as the dependent variable in this study. Data has been analysed with SPSS-20 version.

Cumulative survival has been calculated by different background characteristics. To calculate hazard risks, Cox regression proportional hazard model have also been used (for details see Retherford and Choe, 1993).

Findings:

Results from Bi-variate and tri-variate analysis

The Smokeless tobacco use poses a number of health risks. In particular, smokeless tobacco is a well established cause of oral cancer, one of the most common cancers in India. Still, in India 26 percent of adults in age 15 and above uses any smokeless tobacco products (Table 1). The consumption of any form of smokeless tobacco in all the selected states is above the national percent. Among the states, it is higher in Bihar (49.6 %) followed by Chhattisgarh (49.4 %) and Jharkhand (48.7 %).

Figure 1: Spatial presentation of the percentage of male adults using smokeless tobacco in the selected states of India.
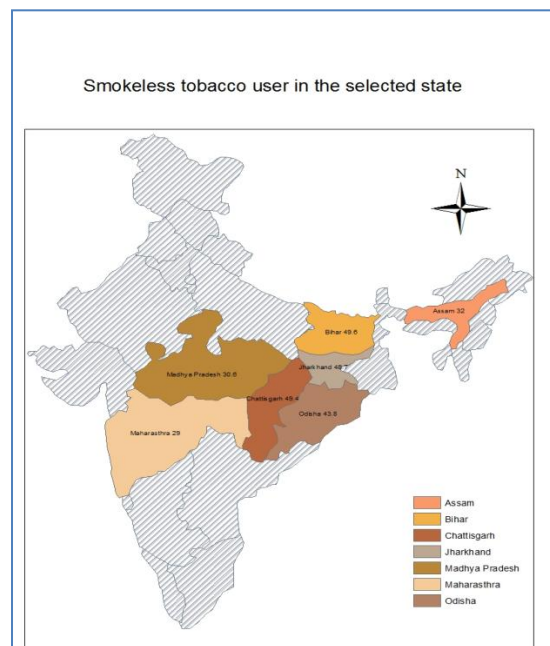
In most of the states and India, *Khaini* or tobacco lime is more prevalent than any other form of smokeless tobacco. The state level prevalence of *Khaini* ranges from 13.8 percent in Madhya Pradesh to 28 percent in Bihar. However, in Assam and Odisha betel quid with tobacco is more prevalent than *Khaini*. As compare to other forms of smokeless tobacco, oral tobacco as snuff is less prevalent among the population of India and selected states except in Chhattisgarh in which 29.5 percent adults consume oral tobacco as snuff.

Table 2 present the prevalence of use of different type of smokeless tobacco among male adults aged 15 years and more in India and its states. Results reveal that more than one third of male adults in India used any smokeless tobacco products and its prevalence in varies by the selected states. Prevalence of smokeless tobacco use is higher in Bihar (62 %) and lowest in Maharashtra (35 %). Again *Khaini* was mostly used by male adults in Bihar (51.2 %) and Jharkhand (50.8 %) and betel quid with tobacco is mostly used by male adults of Odisha (22.5 %). However, one fourth of the male adults in Chhattisgarh used oral tobacco as snuff. *Gutkha* and Areca nut was most popular among the males of Madhya Pradesh (26.7 %) followed by Jharkhand (18.5 %).

It is clear from the results that as education increases, the prevalence of use of smokeless tobacco reduces as adults with no formal education consumed 43 percent of smokeless tobacco as compared to 41.4 percent and 35.4 percent with less than primary and less than secondary education (Table 3). The results also reveal that irrespective of educational level of adults, smokeless tobacco was mainly consumed by adults in the age group 25-44 and who resides in rural area. Tobacco use is higher among rural adults (44.3 %) as compare to urban adults (35.6 %) with no formal education and 37.8 percent to 29 percent with less than secondary education.

Table 3.1 shows that the rural urban differential of smokeless tobacco users. The smokeless tobacco consumption increases by age and residence in the selected states. The table shows that higher proportion of less than primary educated male adults use smokeless tobacco as compared to other groups. Secondary and above educated adults had low usage of smokeless tobacco across the states. The rural and urban differences are found to be higher in all the educational categories except for no formal education in all the selected states. The geographical area plays very important rule for smokeless tobacco use. In the table for all states, in less than primary educational category smokeless tobacco use is found to be higher. Across the categories, once again the age group 25-44 show predominate use of smokeless tobacco in all the selected states.

Table 4 shows the prevalence of smokeless tobacco by occupational status of the male adults in India. Self employed adults (38.5 %) are more involved in consumption of smokeless tobacco in India. It has been observed from the estimates that irrespective of the occupational status of adults, prevalence of smokeless tobacco use is higher among the male adults in the age group 25-44 years, and who are residing in rural areas. In the same age group, a high proportion of retired or unemployed (45.3 %) and self employed (40.4 %) adults used the smokeless tobacco than employees with salary, wages and students. In rural areas, most of the smokeless tobacco consumption is more in self employed and employees with salary and wages as compared to urban adults (almost one fourth of the self employed and employees with salary and wages consumed smokeless tobacco in urban area). Tobacco use has been found to be inversely related to the educational level. Among male adults, tobacco use decrease with their education (Table 4). Consumption of smokeless tobacco was decreased by 8-10 percent age points among males who were involved in any type of occupation.

Table 4.1 shows that smokeless tobacco consumption by age and residence. The prevalence rate of smokeless tobacco among salaried and wages in the age group 45-64and 65 year and above is same which is higher than other age group. Self employment group is higher of the smokeless tobacco users than other occupational group. However, states like Bihar, Jharkhand, Odisha and Chhattisgarh show higher use in first occupational group of salary and wages. If we see the prevalence rate of the all category in the prevalence rate is high in the 45-64 age group. Rural smokeless tobacco prevalence rate is high than urban areas. Among all occupation prevalence is

not much affected by education below secondary. In Assam among salaries and wages the prevalence rate of smokeless tobacco is almost same. Among all occupation accepts unemployed and retired the smokeless tobacco user higher in rural area compare to urban area. Among more educated people have use less percentage of smokeless tobacco user compare to other categories. This table shows the prevalence of smokeless tobacco by age, residence and education in Jharkhand state. The distribution of smokeless tobacco users by age shows that the prevalence rate is relatively higher among 45 years and older people who are working as well as the person who retired or unemployed. By place of residence, majority of users reside in rural areas where the proportion is higher than rural counterparts. It is worth noting that working and retired/unemployed persons who never went to school or having less than primary education are more likely to use smokeless tobacco than person who are having primary and above education in Jharkhand.

However, large variations are marked in case of user's age in Odisha. The proportions of smokeless tobacco user are significantly higher in 65 and older age group which ranges from 62 percent to 75 percent in all occupational category. No much variation has been observed in case of place of residence. By occupation, persons who are having less than primary education and also working (salaried/wages or self employed) are more likely to use smokeless tobacco than other educational panels which ranges from 64 percent to 73 percent. In Chhattisgarh, among salaries and wages and also among self employed the prevalence is high in 25-44 age group. Among retired and unemployed it is high in 45-64 age groups. In this state also among all occupation groups the prevalence is high in rural than in urban. Among adults with salaries and wages the prevalence is high in less than primary education, among self employed the prevalence is high in primary but less than secondary and among retired or unemployed the prevalence is high in secondary education.

In Madhya Pradesh, among salaries and wages the prevalence of smokeless tobacco is high in 45-64 age groups. Among self employed it is high in 25-44 age group and among retired or unemployed it is high in 15-24 age group. In all occupational groups accept retired or unemployed the prevalence is high in rural than in urban. Among salaries and wages the prevalence is high in no formal schooling. Among self employed and retired or unemployed the prevalence is high in primary but less than secondary education. In Maharashtra, among all occupational groups the prevalence of smokeless tobacco is not much affected by age groups and also prevalence is higher in rural than in urban. The prevalence is high in less than primary education among salaries and wages.

Results from Survival analysis

Figure 2 to 5 give an idea how male adults becomes smokeless tobacco user from non-user. Their survival curves are developed to know the tentative age where most of the male adults start using the smokeless tobacco substance. The approach is used as to remove the truncation bias.

*Figure 2: Survival carve of smokeless tobacco
used by geographical regions, India*
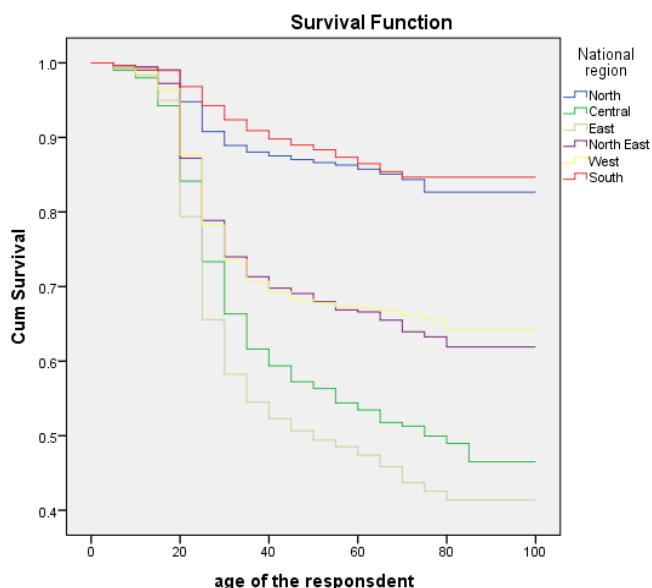
Survival Function

The figure represents the survival functions of respondents in regions of India. It shows that southern region has lower prevalence among those who are of less than 20 years old. The smokeless tobacco consume is maximum in northern and central provinces at any given age. The figure depicts that with increasing age the prevalence rate is increasing throughout all regions.

Figure 3: Survival curve of smokeless tobacco
used by residence, India

Survival Function
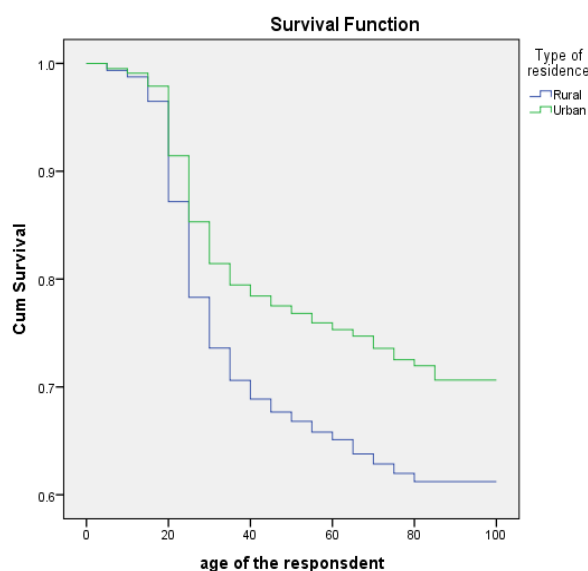
This graph shows the differentials in consumption of smokeless tobacco and surviving without smokeless tobacco consumption in urban and rural areas. The rural area shows higher consumption than urban areas at any age. The respondents of rural areas of less than 40 years age group have an about 40 percent smokeless tobacco use where as urban male adults are around 30 percent.

Survival Function
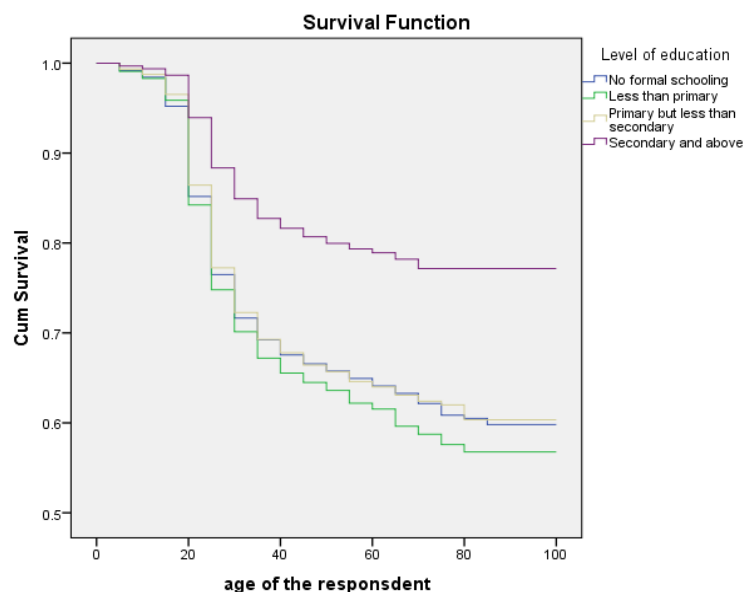
Figure 4: Survival curve of smokeless tobacco
used by level of education, male, India
Education has a significant relationship with the consumption of smokeless Tobacco. The consumption of tobacco is slightly higher among less primary educated than the no formal educated people. Secondary educated used tobacco at the age 20 years are 15

percent while less than primary educated used less than 25 percent. There are minor differences in the consumption of tobacco between no formal educated and secondary educated people by age 20.

Figure 5: Survival curve of smokeless tobacco used by occupational categories, male, India

Figure 5 shows the relationship between respondent's occupational status with their age and survival ship.
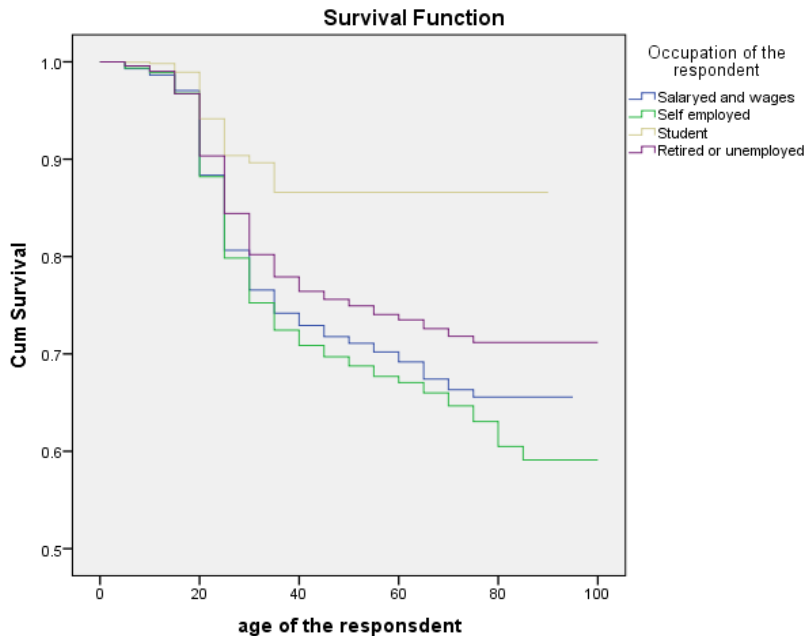
Among the occupation groups, students are least users of smokeless tobacco as compare to other categories. Self employed adults are 28 percent more likely to become users of smokeless tobacco at age around 30 years in comparison with adults with salaries and wages and retired or unemployed adults.

Table 5 show the results of Cox proportional model applied on use of smokeless tobacco among males in India. Significant association has been found in usage of tobacco with the level of education and occupation in India. It has been observed that male adults who have less than primary education are 11 percent and who have less than secondary education are 7 percent more likely to use smokeless tobacco as compare to adults with no formal education in India. In contrast, adults with higher education are 37 percent less likely to use smokeless tobacco. Tobacco use is higher among those adults who are employees with salaries and wages. Among all occupational categories, tobacco use is lower among student. Students are 45 percent less likely to use smokeless tobacco in comparison with those employees with salaries and wages. Consumption of smokeless tobacco is lower among adults who were aware of bad health effects of tobacco. By place of residence the adults in the urban areas are 20 percent less likely to use smokeless tobacco compared to their rural counterparts. Consumption of smokeless tobacco is higher among central and eastern regions (3 times higher) as compare to northern region of the other region.

Conclusions

Present study aims to study the level, pattern, differentials of smokeless tobacco use among males and influence of their educational and occupational levels on smokeless tobacco use. The pattern of smokeless tobacco use among adults varies according to their education, occupational and other socio-economic characteristics in India and its states. Education is found to be an important determinant in this concern as prevalence of use of tobacco reduces as education increases. Although, users of smokeless tobacco exists in all occupational categories, it is found to be more among self employed adults and employees with salary and wages. Among states, prevalence of use of smokeless tobacco is high in states of Bihar, Jharkhand and Chhattisgarh. Identifying occupation and education specific differences in smokeless tobacco use can provide a useful "signpost" that needs to be addressed by policymakers and the broader community through allocation of resources. The results clearly indicate that education and occupation have important simultaneous and independent relationships with tobacco use that require attention from policymakers and researchers alike. This clearly states that the income is very less of the expenditure on health care due to tobacco use. We can say here further predicts that the health costs of tobacco to India will increase unless any further rise in tobacco consumption is stopped.

References:

- Critchley, J. A., Unal, B. (2003). Health effects associated with smokeless tobacco: A Systematic review, *Thorax* Vol. 58:435-43.
- Gupta, P.C., Mehta, F.S., Pindborg J.J., et. al (1986). Intervention study for primary prevention of oral cancer among 36 000 Indian tobacco users. *Lancet*, **1,** 1235-39.
- Hirayama, T. (1966). An epidemiological study of oral and pharyngeal cancers in Central and south East Asia. *Bull WHO* Vol. 34:41-69.
- International Institute for Population Sciences. (2009-10). The Global Adult Tobacco Survey (GATS), Ministry of Health and Family Welfare, Govt. of India.
- Ravenholt, R.T. (1990). Tobacco's Global Death March. *Population and Development Review*, Vol. 16(2): 213-240.
- Retherford, R.D. & M.K., Choe (1993). *Statistical models for causal analysis*. John Wiley & Sons, Inc., New York.
- Reddy K.S., Gupta P.C. Indian J Med Res 123May (2006). Tobacco control of India. pp 579-582.
- aSWorld development report (1993). *Investing in health*. New York (NY): Oxford University Press; 1993.
- World Health Organization (2001). *Tobacco and the rights of the child*, WHO, Geneva, 2001.
- World Health Organization (2003). Tools for advancing tobacco control in the 21st century: Policy recommendations for smoking cessation and treatment of tobacco dependence".

*****

Table 1: Percentage of adult aged 15 and above (both males and females) who are current users of various types of smokeless tobacco, India

State	Any Smokeless Tobacco Product	Betel Quid with Tobacco	Khaini or Tobacco Lime	Gutkha Areca Nut	Oral Tobacco as Snuff	Any Other	(N)
India	25.9	6.2	11.6	8.2	4.7	4.4	69296
Bihar	49.6	8.4	28.0	6.2	4.6	2.5	2392
Assam	32.0	14.7	14.1	7.3	1.8	12.7	5218
Jharkhand	48.7	5.2	34.5	8.2	7.9	2.3	2061
Odisha	43.8	17.2	11.4	9.2	7.3	2.1	2089
Chhattisgarh	49.4	5.4	22.9	11.9	29.5	3.7	2064
Madhya Pradesh	30.6	6.8	13.8	15.9	4.7	4.7	1810
Maharashtra	29.0	4.0	14.7	8.8	8.8	1.4	4667

Table-2: Prevalence of adult aged 15 and above who are current users of various types of smokeless tobacco, male, India

State	Any Smokeless Tobacco Product	Betel Quid with Tobacco	Khaini or Tobacco Lime	Gutkha Areca Nut	Oral Tobacco as Snuff	Any Other	(N)
India	32.9	7.5	18	13.1	3.3	2.3	33767
Bihar	62.2	13.2	51.2	14	3.2	3.5	1141
Assam	39.8	17.8	25.7	10.4	1.5	9.6	2605
Jharkhand	60.0	9.4	50.8	18.5	6.5	1.8	979
Odisha	50.8	22.5	12.3	17.7	2.0	2.0	1033
Chhattisgarh	52.5	3.9	26.1	16.8	23.4	2.2	997
Madhya Pradesh	43.3	9.7	19.7	26.7	2.1	4.4	826
Maharashtra	35.3	4.5	22.8	13.4	4.2	2.7	2328

Table-3: Consumption of smokeless tobacco by education according to age and residence male, India.

India	No Formal Schooling (%)	(N)	Less than Primary (%)	(N)	Primary but Less than Secondary (%)	(N)	Secondary and Above (%)	(N)	Total (%)	(N)
Age										
15-24	37.7	144	38.0	189	26.1	569	(0)	371	(-)	1277
25-44	50.3	1113	47.2	850	43.7	2039	27.6	1735	39.8	5744
45-64	37.1	731	36.7	438	36.6	774	(0)	541	33.4	2493
65+	40.0	363	37.3	162	26.4	133	(0)	79	34.0	738
Residence										
Rural	44.3	4777	43.0	2979	37.8	6530	25.5	5912	36.8	20198
Urban	35.6	1319	34.9	1118	29.0	3724	(0)	7408	(0)	13569
Total	**43.0**	**6096**	**41.4**	**4097**	**35.4**	**10254**	**(-)**	**13320**	**32.9**	**33767**

Note: (-) Percentages not shown based on fewer than 25; Unweighted cases

Table 3.1: Consumption of Smokeless tobacco by education according to their age and residence among male adult in the selected states.

State	No Formal Schooling		Less than Primary		Primary but Less than Secondary		Secondary and Above		Total	
Bihar	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)
Age										
15-24	63.4	32	70.3	30	20.3	75	27.5	78	38.7	215
25-44	75.9	146	86.1	51	72.3	90	60.1	167	72.0	454
45-64	78.4	129	75.3	39	74.3	76	79.6	83	77.3	327
65+	75.2	76	(-)	(-)	39.2	25	(-)	(-)	68.7	143
Residence										
Rural	74.1	305	79.3	98	48.9	161	53.1	153	63.5	717
Urban	78.2	78	60.4	42	55.9	105	44.0	197	53.5	422
Total	**74.3**	**383**	**78.2**	**140**	**49.8**	**266**	**51.1**	**350**	**62.3**	**1139**
Assam	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)
Age										
15-24	(-)	(-)	31.9	(-)	34.6	120	22.8	142	29.3	292
25-44	33.4	204	54.6	212	48.9	479	40.2	584	44.1	1479
45-64	30.8	232	58.5	120	47.5	254	32.2	172	41.2	778
65+	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	43.9	55
Residence										
Rural	33.6	432	50.7	340	45.4	783	32.3	668	39.9	2223
Urban	47.9	30	(-)	(-)	30	85	39.7	242	39.1	381
Total	**34.7**	**462**	**51.2**	**364**	**43.7**	**868**	**34.4**	**910**	**39.8**	**2604**
Jharkhand	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)
Age										
15-24	(-)	(-)	82.2	25	43.7	81	27.1	72	42.9	200
25-44	76.1	167	76.7	66	74.5	115	45.8	143	65.8	491
45-64	80.8	77	97.7	28	70.8	51	42.1	56	71.5	212
65+	79.8	35	(-)	(	(-)	19	(-)	9	69.8	76
Residence										
Rural	73.4	263	84.0	108	58	187	41.6	132	63.4	690
Urban	70.1	38	76.4	26	62.2	79	36.0	148	50.0	289
Total	**73.0**	**301**	**82.7**	**132**	**59**	**266**	**39**	**280**	**60**	**979**
Odisha	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)
Age										
15-24	(-)	(-)	55.1	23	42.2	56	20.2	59	34.6	150
25-44	56.1	92	71.9	92	64.8	209	37.2	170	56.1	563
45-64	47.4	69	64.6	56	63.8	50	40.9	61	53.6	236
65+	61.2	34	79.6	27	(-)	16	(-)	7	66.7	84
Residence										
Rural	50.5	177	67.5	165	58	250	33.8	168	52.3	760
Urban	50.6	30	65.5	33	59.2	81	27.2	129	43.7	273
Total	**50.5**	**207**	**67.2**	**198**	**58.2**	**331**	**31.9**	**297**	**50.8**	**1033**

Note: (-) Percentages not shown based on fewer than 25; Unweighted cases.

Continue.............

State	No Formal Schooling		Less than Primary		Primary but Less than Secondary		Secondary and Above		Total	
Chhattisgarh	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)
Age										
15-24	(-)	(-)	(-)	(-)	37.7	94	(-)	65	35.4	193
25-44	76.6	124	55.9	80	70.5	147	52.8	121	65.2	472
45-64	53.1	116	50.2	40	51.8	48	51.1	38	52.1	242
65+	62.3	57	(-)	(-)	53.0	(-)	(-)	(-)	52.5	90
Residence										
Rural	62.6	295	51.3	125	52.8	252	40.5	140	52.8	812
Urban	(-)	(-)	70.6	28	55.7	48	39.4	92	49.1	185
Total	**62.3**	**312**	**52.7**	**153**	**53**	**300**	**40.3**	**232**	**52.5**	**997**
Madhya Pradesh	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)
Age										
15-24	44.2	(-)	(-)	(-)	36.7	92	(-)	53	34.4	176
25-44	59.4	91	43.3	51	64.6	131	37.8	134	52.9	407
45-64	37.6	49	33.8	25	49.7	51	35.8	54	40.2	179
65+	49.8	33	(-)	(-)	(-)	(-)	(-)	(-)	43.4	64
Residence										
Rural	51	157	41.6	68	50.4	173	38.5	78	47.3	476
Urban	39.7	30	39.9	40	42.9	107	25.4	173	33.9	350
Total	**49.8**	**187**	**41.2**	**108**	**48.6**	**280**	**31.5**	**251**	**43.4**	**826**
Maharashtra	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)
Age										
15-24	(-)	(-)	39.8	36	33	109	(-)	245	(-)	408
25-44	58.9	129	57.1	138	48.1	342	26.2	546	39.8	1155
45-64	57.5	110	49.6	93	54.1	135	(-)	209	43.2	547
65+	48.6	81	43	41	33.8	57	29.1	36	39.8	215
Residence										
Rural	52.6	261	48.6	197	50.5	303	30.7	324	43.8	1085
Urban	46.9	77	51.7	111	36.8	340	(-)	712	25.9	1240
Total	**51.3**	**338**	**49.6**	**308**	**44**	**643**	**(-)**	**1036**	**35.2**	**2325**

Note: (-) Percentages not shown based on fewer than 25; Unweighted cases.

Table-4: Consumption of smokeless tobacco by occupation according to age, residence, education, male, India

India	Salaries and Wages		Self Employed		Students		Retired or Unemployed		Total	
	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)
Age										
15-24	32.7	1310	36.8	1636	(-)	2775	29.3	399	(-)	6120
25-44	38.8	6956	40.4	8585	25.0	271	45.3	901	39.8	16713
45-64	29.8	3060	36.3	4181	(-)	(-)	32.8	1141	33.4	8406
65+	35.9	365	37.0	922	(-)	(-)	30.9	1230	34.0	2528
Residence										
Rural	40.9	5915	42.1	10171	(-)	1711	38.0	2401	36.8	20198
Urban	25.0	5776	27.9	5153	(-)	1370	25.2	1270	23.6	13569
Education										
No formal schooling	45.7	1680	42.1	3310	(-)	(-)	40.2	1102	43.0	6096
Less than primary	44.9	1141	41.7	2347	(-)	51	38.6	558	41.4	4097
Primary but less than secondary	38.5	3072	41.4	5377	(-)	836	34.2	969	35.4	10254
Secondary and above	(-)	5798	29.0	4290	(-)	2190	25.6	1042	(-)	13320
Total	**35.3**	**11691**	**38.5**	**15324**	**(-)**	**3081**	**34.5**	**3671**	**32.9**	**33767**

Table 4.1: Consumption of smokeless tobacco by occupation according to age, residence and education among male adults in the selected States.

Background Characteristics	Salaries and wages		Self Employed		Student		Retired or unemployed		Total	
Bihar	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)
Age										
15-24	57.7	58	72.1	40	(-)	96	(-)	(-)	38.4	216
25-44	67.6	197	73.2	216	(-)	2	82.2	40	72.1	455
45-64	77.8	108	78.1	176	(-)	0	72.7	43	77.3	327
65+	(-)	(-)	70	53	(-)	0	64.9	69	68.7	143
Residence										
Rural	68.9	226	74.9	330	(-)	53	73.5	110	63.3	719
Urban	57.6	158	68.9	155	(-)	45	63.6	64	53.5	422
Education										
No formal schooling	70.9	149	79	157	(-)	0	72.2	77	74.3	383
Less than primary	69.8	55	87.9	58	26.9	2	85.1	25	78.2	140
Primary but less than secondary	70.3	66	66.2	132	(-)	40	83.8	28	49.8	266
Secondary and above	55.8	114	70.9	136	(-)	56	50.4	44	51.1	350
Total	**67.4**	**384**	**74.8**	**483**	**(-)**	**98**	**72.3**	**174**	**62.3**	**1139**
Assam	**(%)**	**(N)**	**(%)**	**(N)**	**(%)**	**(N)**	**(%)**	**(N)**	**(%)**	**(N)**
Age										
15-24	31.0	40	40.5	88	(-)	143	(-)	(-)	29.3	292
25-44	42.7	406	44.3	961	43.5	38	47.7	75	44.1	1480
45-64	41.7	169	41.9	477	(-)	(-)	39.0	130	41.2	778
65+	(-)	(-)	24.6	24	(-)	0	59.2	29	43.9	55
Residence										
Rural	41.2	503	42.6	1360	(-)	144	46.4	217	39.9	2224
Urban	37.7	114	41.6	190	(-)	39	59.1	38	39.1	381
Education										
No formal schooling	36.7	99	33.9	249	(-)	(-)	34.8	113	34.7	462
Less than primary	65.4	37	51.5	293	(-)	(-)	41.1	33	51.2	364
Primary but less than secondary	42.2	192	45	586	28	40	60.5	50	43.7	868
Secondary and above	37.2	289	36.7	421	(-)	141	60.3	59	34.4	910
Total	**40.5**	**617**	**42.5**	**1549**	**(-)**	**183**	**48.8**	**255**	**39.8**	**2604**

Note: (-) Percentages not shown based on fewer than 25; Unweighted cases.

Continue............

Background Characteristic	Salaries and wages		Self Employed		Student		Retired or unemployed		Total	
Jharkhand	**(%)**	**(N)**	**(%)**	**(N)**	**(%)**	**(N)**	**(%)**	**(N)**	**(%)**	**(N)**
Age										
15-24	62.0	65	65.8	33	(-)	75	56.6	27	42.9	200
25-44	70.9	237	58.6	170	(-)	(-)	72.8	77	65.8	491
45-64	64.1	81	74.9	98	(-)	0	79.1	33	71.5	212
65+	(-)	(-)	60	26	(-)	0	70.6	37	69.8	76
Residence										
Rural	73.9	249	66.1	257	(-)	48	72.5	136	63.4	690
Urban	56.0	146	59.4	70	(-)	35	54.1	38	50	289
Education										
No formal schooling	77.5	133	64.6	97	(-)	0	77.1	71	73	301
Less than primary	72.3	44	87.3	52	(-)	0	89.8	36	82.7	132
Primary but less than secondary	74.9	103	65.6	99	(-)	29	51.8	35	59	266
Secondary and above	48.5	115	50.6	79	(-)	54	48.0	32	39	280
Total	**68.1**	**395**	**64.9**	**327**	**(-)**	**83**	**68.7**	**174**	**60**	**979**
Odisha	**(%)**	**(N)**	**(%)**	**(N)**	**(%)**	**(N)**	**(%)**	**(N)**	**(%)**	**(N)**
Age										
15-24	54.0	60	36.9	27	(-)	51	(-)	(-)	34.6	150
25-44	62.2	325	49.5	226	55.9	(-)	(-)	(-)	56.1	563
45-64	44.8	108	62.9	106	(-)	0	(-)	22	53.6	236
65+	(-)	(-)	70.7	27	(-)	0	61.9	47	66.7	84
Residence										
Rural	58.3	359	55.1	304	(-)	31	47.9	66	52.3	760
Urban	51.2	144	43.4	82	(-)	24	39.8	23	43.7	273
Education										
No formal schooling	52.1	105	51.2	77	(-)	0	41.7	25	50.5	207
Less than primary	73.0	101	64.2	71	(-)	0	55.2	26	67.2	198
Primary but less than secondary	66.4	156	56.3	145	(-)	(-)	(-)	(-)	58.2	331
Secondary and above	34.6	141	42.8	93	(-)	44	(-)	(-)	31.9	297
Total	**56.9**	**503**	**53.4**	**386**	**(-)**	**55**	**46.4**	**89**	**50.8**	**1033**

Note: (-) Percentages not shown based on fewer than 25; Unweighted cases.

Continue.....

Background Characteristic	Salaries and wages		Self Employed		Student		Retired or unemployed		Total	
Chhattisgarh	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)
Age										
15-24	44.2	36	61.4	64	(-)	70	(-)	(-)	35.4	193
25-44	68.9	164	64.7	284	(-)	(-)	(-)	(-)	65.2	472
45-64	55.6	63	50.4	171	(-)	0	(-)	(-)	52.1	242
65+	(-)	(-)	46.3	47	(-)	(-)	45.3	38	45.5	90
Residence										
Rural	62.6	176	59.2	503	(-)	60	39.3	73	52.8	812
Urban	50.4	91	54.4	63	(-)	(-)	68.6	(-)	49.1	185
Education										
No formal schooling	67.5	73	62.7	209	(-)	0	43.7	30	62.3	312
Less than primary	69.2	40	48.9	102	(-)	(-)	(-)	(-)	52.7	153
Primary but less than secondary	55.3	64	65.9	182	(-)	27	29.0	27	53	300
Secondary and above	53.5	90	45.4	73	(-)	48	(-)	(-)	40.3	232
Total	**60.5**	**267**	**59**	**566**	**(-)**	**76**	**41.2**	**88**	**52.5**	**997**
Madhya Pradesh	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)
Age										
15-24	26.0	30	53.5	60	(-)	63	(-)	23	34.4	176
25-44	47.6	116	57.1	256	(-)	2	38.2	33	52.9	407
45-64	55.1	48	35.5	106	(-)	(-)	46.6	25	40.2	179
65+	(-)	(-)	48.7	29	(-)	(-)	31.3	29	38.5	64
Residence										
Rural	55.7	63	53.6	308	(-)	36	40.6	69	47.3	476
Urban	33.1	136	39	143	(-)	31	51.9	40	33.9	350
Education										
No formal schooling	70.2	31	49.1	122	(-)	0	35.5	34	49.8	187
Less than primary	(-)	(-)	45	69	(-)	0	(-)	(-)	41.2	108
Primary but less than secondary	44.7	57	61.8	154	(-)	33	52.7	36	48.6	280
Secondary and above	35.3	95	34.6	106	(-)	34	(-)	(-)	31.5	251
Total	**43.4**	**199**	**50.4**	**451**	**(-)**	**67**	**43.6**	**109**	**43.4**	**826**

Note: (-) Percentages not shown based on fewer than 25; Unweighted cases.

Continue.........

Background Characteristic Maharashtra	Salaries and wages		Self Employed		Student		Retired or unemployed		Total	
	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)	(N)
Age										
15-24	30.5	71	38.8	123	(-)	189	(-)	26	(-)	409
25-44	32.9	475	45.5	632	(-)	(-)	40.7	38	39.9	1156
45-64	36.9	170	48.8	307	(-)	(-)	36.7	66	43.3	548
65+	36.5	25	47.5	91	(-)	(-)	33.7	100	39.8	215
Residence										
Rural	44.3	246	51.2	661	(-)	77	44.5	101	43.8	1085
Urban	26.6	493	35.7	492	(-)	129	(-)	129	26.1	1243
Education										
No formal schooling	46.5	52	53.3	226	(-)	0	48.0	60	51.3	338
Less than primary	64.7	62	50.9	208	(-)	(-)	25.7	29	49.6	308
Primary but less than secondary	46.2	174	48.6	377	(-)	(-)	35.2	68	44.0	643
Secondary and above	( )	449	33.0	341	(-)	173	(-)	73	(-)	1036
Total	**33.2**	**737**	**45.3**	**1152**	**(-)**	**206**	**32.4**	**230**	**35.2**	**2325**

Note: (-) Percentages not shown based on fewer than 25; Unweighted cases.

Table 5: Results of Cox proportional hazard model for smokeless tobacco use among male adults in India.

Background Characteristics	Hazard ratio
Residence	
Rural®	1.000
Urban	0.633***
Education	
No formal education®	1.000
Less than primary	1.117**
Primary but less than secondary	1.074**
Secondary and above	0.633***
Occupation	
Salaries and wages®	1.000
Self employed	0.888***
Student	0.550***
Retired and unemployed	0.757***
Awareness regarding bad health effects of tobacco	
No®	1.000
Yes	0.988
National Regions	
North®	1.000
Central	3.218***
East	4.992***
North-East	2.118***
West	2.501***
South	0.779***

Note:®: Reference category,***P<0.01,**P<0.05,*P<0.1