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# Study of regional habits influencing Pharyngeal Cancers – Tobacco in various forms with or without Alcohol

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## ABSTRACT

The present study was a case control study on pharyngeal cancers and the habits related to it which was carried out in our Dept of ENT, using 30 cases and 90 hospital based controls during a 2 years study period. The various habits of the patients based on the type of tobacco, alcohol intake pan chewing, dietary habits like regular use of salted or smoked fish were studied. We investigated the effects on risk in males and females of tobacco smoking, drinking alcohol, non smoke tobacco use - pan (betel nut)-tobacco chewing and dietary habits. Males were affected. predominantly with 9:1 ratio, more in above 60 age group(in 50%) .More than 50% cases were literate and maintained oral hygiene. Majority of cases were dwelling in rural areas and were manual labourers indulging in various varieties of daily wage works by occupation. More than 50 % came from very poor socioeconomic status . 93% cases showed tobacco smoking history, beedi was the commonly used type with >30 years duration in 76% cases. Alcohol drinking was observed in 76% cases with 20-30 yrs duration in majority cases. Indian made foreign liquors were used in all patients. Among 56% non smoke tobacco use cases, 82 % used pan-tobacco(betel quid) chewing with more than 20 years duration. Among the paticnts, more than 50% were oropharyngeal followed by hypopharyngeal and nasopharyngeal cases and histopathologically were squamous cell carcinoma. On interpreting the results, there was significant positive association with risk were observed for beedi smoking (Relative risk-9.661, odds ratio 15.3 and P value 0.0001), alcohol (Relative risk-2.042, odds ratio -2.512 and P value 0.01), Pan tobacco chewing (Relative risk-3.30, odds ratio 5.615 and P value 0.001), and insignificant results for regular use of salted smoked fish in diet (Relative risk-1 458, odds ratiol.66 and P value 0.59). Although our study has several limitations inherent to case control studies, and less sample size, advantages are heterogeneity of distribution of exposures, a detailed assessment of lifestyle habits for both groups of cases and controls. Thus, for purposes of public health education, discouragement of the tobacco, alcohol and pan chewing habits should take priority, although there is a substantial residual benefit to be gained from reductions in the other habits.

## 1. INTRODUCTION

Head and neck squamous cell carcinoma that comprising upper aero digestive tract anatomic sites represent the 7th common cause of cancer death in worldwide for the year 2020, approximately 878,348 new cases and 444,347 deaths from the disease.

Vast majority are squamous cell carcinoma, and the disease typically appears in the oropharynx, ,Oral cavity, hypopharynx or larynx. The development of HNSCC is result of the interaction of both environmental and genetic inheritance and is therefore multifactorial. Smoking and alcohol abuse are major risk factors for the development of this disease. Mortality and morbidity associated with these malignancies remain high causing an impact on the quality of life and also in the treatment cost of the patients.

The head and neck cancer disease can affect overall and mental health, appearance, employment, social life and family living. Also may occur serious changes in the functioning of upper aero digestive tract that affect the quality of life of patients. This shows the importance of a retrospective study to know the etiological factors, especially influence of the habits like tobacco and alcohol use along with other environmental factors resulting in Pharyngeal cancers among those patients came to our ENT Department.

Quiting cigarette smoking, limiting alcohol drinking, avoiding tobacco chewing, preventing exposure to passive tobacco smoke, environmental carcinogens, screening for HPV, maintaining good oral health, nutritional habits and managing stress could be good primary measures for preventing or delaying HNSCC development.

## 2. METHODOLOGY

All diagnosed cases of pharyngeal malignancies coming to our ENT Department are included under study as cases. The control group similar in gender and age are selected from the hospital who come as by-standers and also from other patients free from the disease under study (pharyngeal malignancies) Bidi smoking, cigarette smoking, alcohol Pan chewing, pan-tobacco chewing, nasal snuff inhalationand dietary habits like regular use of salted smoked fish were the habits ascertained for the cases and controls.

After obtaining Written informed consent from participants, Detailed case history with special importance to occupation, oral hygiene, smoking, alcoholism, pan chewing, socioeconomic status etc., and oral cavity examination are done . Data obtained were then statistically analysed.

## 3. RESULTS

The present study was based on 30 cases of pharyngeal cancers presented to our

ENT department .. Among the 90 controls included bye standers and patients came for some ailments to other departments similar in age group, habits, occupational and other factors but free from head and neck cancers.

### *Age distribution among patients:*

The youngest and oldest patient which was included in study was 35 yrs and 80 yrs respectively with mean age of 59.033yrs. Maximum number of patients were in above 60 years age group— 15 cases (50%) followed by 41-50 and 51-60 age group (both 23.33 % each)and controls in 50-60 yrs age group ie 49 controls (54.44%).

### *Sex distribution among patients*

Sex distribution showed prominent male predominance among cases – 27 cases (90% ) and controls - 76 controls (84.44).

### *Occupation of the patients*

Majority of cases and controls were manual labourers indulged in agriculture and other daily wage works. (73.33% cases and 53.33% controls). Few were involved in automobile and industrial related jobs.

### *Residence of patients*

70% cases and 67.77 % controls were residing in rural areas while 30% cases and 29% controls residing in urban areas.

### *Literacy rate:*

Among cases 60% patients were literate who were able to read and write, while 40% illiterate. Literacy rates were more in controls compared to cases. — 71% were able to read and write.

### *Oral hygiene:*

Two third of cases brushed their teeth daily atleast once (66.66%). Only few were using tooth paste and tooth brush, some used house hold materials for brushing (eg. Tree Stick). 33.33% were not at all brushing their teeth and so oral hygiene was very poor. Among controls 86.66 % were having comparatively good oral hygiene and brushed atleast once daily.

### *Socioeconomic status:*

Socioeconomic status of patients were poor with monthly family income less than 5000 in 40% and in (5000-10000) range in 53.33%. Among controls majority were in (5000-10000) range - 37.77%, followed by (<5000) for 34.44% and (10000-15000) for 23.33%.

### *Tobacco Smoking,*

28 cases (93.33%) were chronic smokers in which 23 were smokers for more than 30 years. Among controls, 47.77 were smokers while 52.22 % were having negative history for tobacco smoking. In both groups beedi was the preferred type of smoking. 78.57 % in cases and 55.81 % in controls followed by cigarettes ( 14.28% in cases and 39.5% in controls). Majority of cases used | packet of beedi per day (approx 20-25 beedis per day).

Two each among cases and controls were using cigar. No one was using Pipes or hookah since majority are from poor socioeconomic class and not widely available in the region.

***Alcohol Intake***

76.66% cases were chronic alcohol drinkers in which 69.5% were addicts for 20-30 years. All of them (100%) were using Indian made foreign liquor (Rum, whisky or brandy depending on availability). Among controls 56.66% were drinkers but in that 54.9% were using Indian made foreign liquor(Rum, whisky or brandy), 43.13 % were using only wine/beer which had lesser alcohol content. Other forms like Toddy and arrack were not used by any cases and controls due to lesser availability in the region except one control who used Arrack.

***Non smoke tobacco***

56.66 % cases and 18.88 % controls only had habit of using non smoke tobacco. Among that 82.35 % cases used tobacco chewing with pan (betel quid) with duration of 20-30 yrs in 52.94 patients. None from cases and controls had history of snuff use. |

***Salted/ Smoked fish or meat***

Among the cases 46.66% have been using regularly salted /smoked dry fish atleast twice a week, but lesser in controls ie 34.44%. Squamous cell carcinoma was the most common histological type noted in the study, Majority (49.7%) of the cases were moderately differentiated , followed by well differentiated and poorly differntiated.

***Etiological Co-Relation***

For Tobacco smoking Exposure rate among cases is 93.33 and among controls is 47.77. Relative risk of disease Incidence is 9.661. Odds ratio is 15.3 .Hence smokers showed risk of having pharyngeal cancer 15.3 times than non smokers and P value of 0.0001 is statistically significant.

For Alcohol Intake Exposure rate among cases is 76.66 and among controls is 56.6. Relative risk of disease Incidence is 2.042. Odds ratio is 2.512 .Hence Alcoholics showed risk of having pharyngeal cancer 2.512 times than non smokers and P value of 0.0001 is statistically significant.

For Pan-Tobacco Chewing Exposure rate among cases is 56.66 and among controls is 18.88. Relative risk of disease Incidence is 3.30. Odds ratio is 5.615 .Hence Pan-Tobacco Chewers showed risk of having pharyngeal cancer 5.615 times than non smokers and P value of 0.0001 is statistically significant.

For Salted/ smoked fish Eaters Exposure rate among cases is 46.66 and among controls is 34.44. Relative risk of disease Incidence is 1.4585. Odds ratio is 1.66 .Hence Salted/ smoked fish Eaters showed risk of having pharyngeal cancer 1.66 times than non smokers and P value of 0.59 is statistically Insignificant.

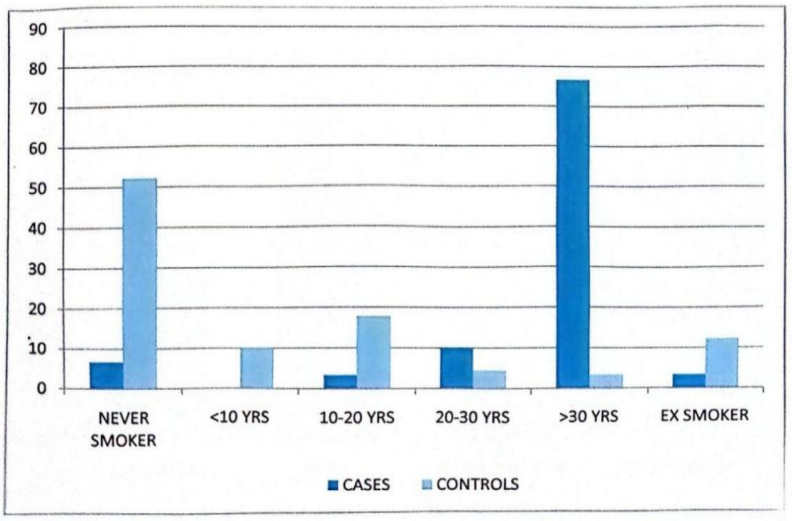
| Habits | Tobacco smoking | Alcohol intake | Pan-tobacco chewing | Salted/ smoked fish |
|---|---|---|---|---|
| Exposure rate for cases | 93.33 | 76.66 | 56.66 | 46.66 |
| Exposure rate for controls | 47.77 | 56.6 | 18.88 | 34.44 |
| Relative Risk | 9.661 | 2.042 | 3.30 | 1.4585 |
| Odds ratio | 15.3 | 2.512 | 5.615 | 1.66 |
| P value | 0.0001 | 0.01 | 0.001 | 0.59 |
| Significance | Significant | Significant | Significant | Insignificant |

**Smoking Co-Relation**

| | CASE | | CONTROL | |
|---|---|---|---|---|
| Years | No. | % | No. | % |
| Never Smoker | 2 | 6.66 | 47 | 52.22 |
| <10 Yrs | 0 | 0 | 9 | 10 |
| 10-20 Yrs | 1 | 3.33 | 16 | 17.77 |

| | | | | |
|---|---|---|---|---|
| 20-30 Yrs | 3 | 10 | 4 | 4.44 |
| >30 Yrs | 23 | 76.66 | 3 | 3.33 |
| Ex- Smoker | 1 | 3.33 | 11 | 12.22 |

**Chart - 9 SMOKING – DURATION IN YEARS AMONG CASES AND CONTROLS**

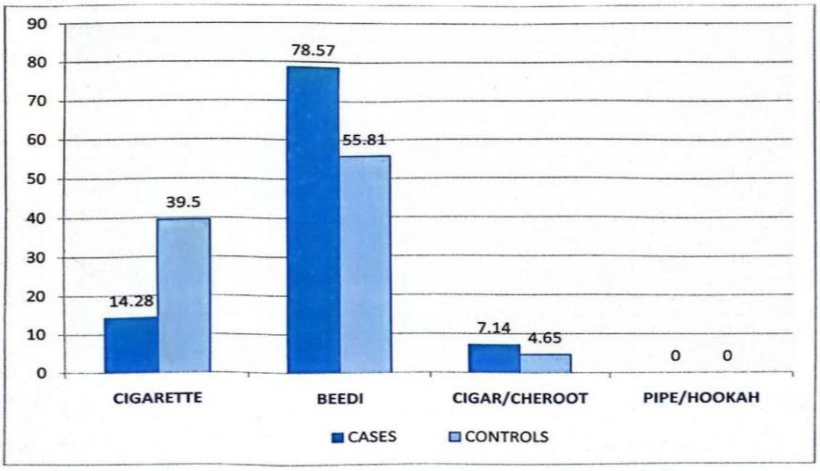



In never smokers, the number of cases is 2 and the percentage is 6.66, whereas the number of control is 47 and percentage is 52.22%. In less than 10 duration , number of cases is 0 and 0%, whereas the number of control is 9 and the percentage is 10%. In 10-20yrs, the number of cases is 1 and 3.33%, whereas the number of control is 16 and the percentage is 17.77%

In 20-30 years, the number of cases is 3 and percentage is 10%, whereas the number of control is 4 and percentage is 4.44%. In more than 30 years, the number of cases is 23 being 76.66%, whereas the number of control is 3 being 3.33%. In Ex-Smoker, the number of cases is 1 being 3.33%, whereas the number of control is 11 being 12.22%.

***Type of Cigarate Co-Relation***

**Chart - 10- TYPE OF CIGARETTE SMOKING AMONG CASES AND CONTROLS**

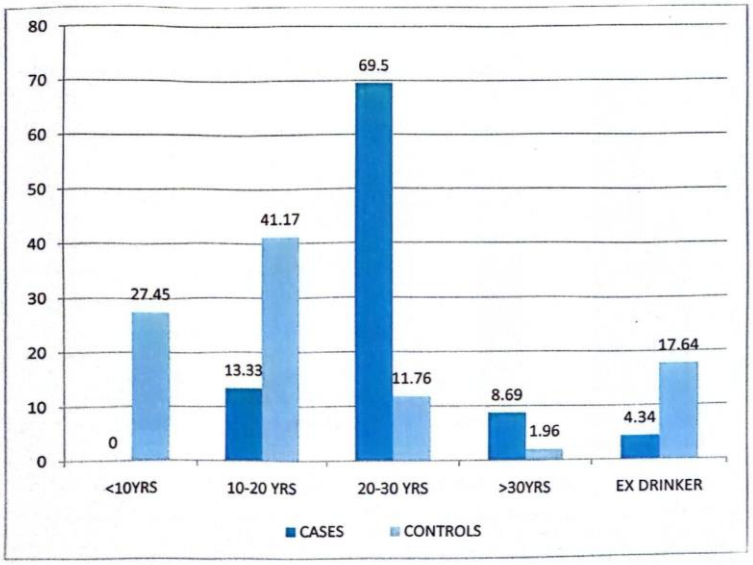


| | CASE | | CONTROL | |
|---|---|---|---|---|
| Type | No. | % | No. | % |
| Cigarette | 4 | 14.28 | 17 | 39.5 |
| Beedi | 22 | 78.57 | 24 | 55.81 |
| Cigar / cheroot | 2 | 7.14 | 2 | 4.65 |
| Pipe / Hookah | 0 | 0 | 0 | 0 |

The number of cases used cigarette is 4 being 14.28% whereas the number of control is 17 and 39.5%. The number of cases used beedi is 22 being 78.57%, whereas the number of control is 24 being 55.82% .The number of cases used Cigar/Cheroot is 2 being 7.14%, whereas the number of control is 2 being 4.65 %.

***Alcohol Drinking Duration CoRelation***

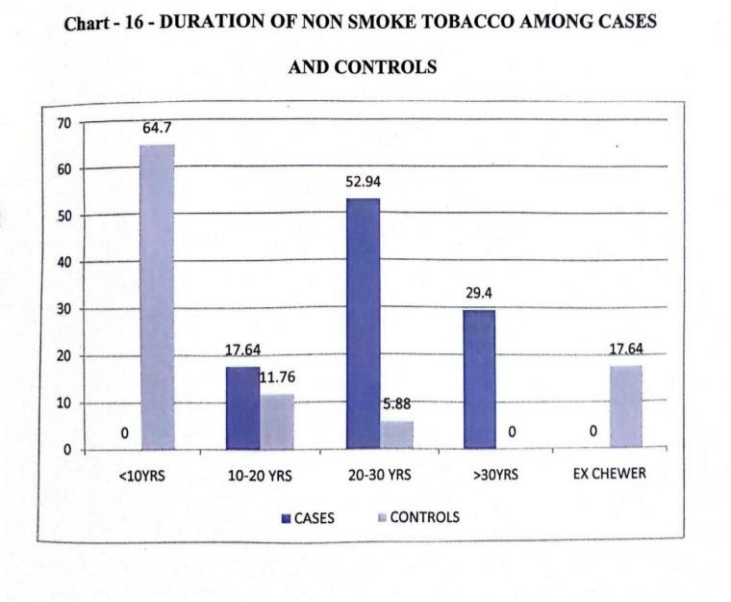
**Table - 12 DURATION OF ALCOHOL DRINKING AMONG CASES AND CONTROLS**




| Years | CASE | | CONTROL | |
|---|---|---|---|---|
| | No. | % | No. | % |
| <10Yrs | 0 | 0 | 14 | 27.45 |
| 10-20 Yrs | 4 | 13.33 | 21 | 41.17 |
| 20-30 Yrs | 16 | 69.5 | 6 | 11.76 |
| >30 Yrs | 2 | 8.69 | 1 | 1.96 |
| Ex- Drinker | 1 | 4.34 | 9 | 17.64 |

In less than 10 years duration , the number of cases is 0 and the number of control is 14 being 27.45% .In 10-20 years, the number of cases is 4 being 13.33 %, whereas number of control is 21 being 41.17 % . In 20-30 years, the number of cases is 16 being 69.5 %, whereas number of control is 6 being 11.76 % .In more than 30 years, the number of cases is 2 being 8.69 %, whereas number of control is 1 being 1.96 %. Among Ex- Drinkers , the cases is 1 being 4.34 % and number of control is 9 being 17.64% .

***Non- Smoke Tobacco Duration Co-Relation***




| | CASE | | CONTROL | |
|---|---|---|---|---|
| Years | No. | % | No. | % |
| <10 Yrs | 0 | 0 | 11 | 64.7 |
| 10-20 Yrs | 3 | 17.64 | 2 | 11.76 |
| 20-30 Yrs | 9 | 52.94 | 1 | 5.88 |
| >30 Yrs | 5 | 29.4 | 0 | 0 |
| Ex- Chewer | 0 | 0 | 3 | 17.64 |

In less than 10 years duration , the number of cases is 0 and the number of control is 11 being 64.7% .In 10-20 years, the number of cases is 3 being 17.64%, whereas number of control is 2 being 11.76% . In 20-30 years, the number of cases is 9 being 52.94%, whereas number of control is 1 being 5.88% .In more than 30 years, the number of cases is 5 being 29.4%, whereas control is 0 .Among Ex- Chewers, the cases is 0 and number of control is 3 being 17.64% .

## 4. DISCUSSION

The present study was based on 30 cases of pharyngeal cancers presented to Our ENT department . Among the 90 controls included bye standers and patients came for some ailments to other department similar in age group, habits, occupational and other factors but free from head and neck cancers.

" The objective of the study was to investigate the association with patterns of - tobacco smoking, chewing and alcohol drinking and dietary habits in the development of pharyngeal cancers over a two year Study period.

### *1. Age distribution among patients:*

Most of the current study participants were above 60 (50%) years of age group, followed by 41-50 and 51-60 years (23.3% each). In our study youngest and oldest patient among cases were 35 years and 80 years respectively with mean age of 59.033 yrs.

Brandizzi et al. in their study found that 28% of oral cancer patients were between 60- 69 years, followed by 27% between 70-79 years and 18% between 50-59- years of age.

According to Abhinandan et al., the commonest age group affected was 6$^{th}$ decade (31.13% cases); 22.8% cases were in the 4th and 18% in 5th decade.

In a study by Ahluwalia et al., the peak incidence was noted among males in 6th decade of life (40.89%), while in females it was Sth decade comprising 37.31% case.

Patel et al. reported that 12.9% of oral and oropharyngeal malignancies were below 35 years of age, 23.8% between 35 and 45, and 63.3% cases over 45 years of age.

The mean age reported in a study done by Durazzo et al. was 57.4 years and only 8.6% of the patients were 40 years or less.

Schantz and Yu (2002) reported that more than 90% of oral cancers occur in patients older than 45 years. The incidence increases steadily until age 65 years.

In conclusion, oral cancer commonly occurs in 5th- 6th decade of life. Though the incidence below 40 years is relatively low, they are not completely spared. It is mainly a disease of middle-aged men, with peak incidence in the seventh decade. Women affected tend to be younger, with a peak incidence before the age of 2o years.

***2. Sex distribution among patients***

In our study, Sex distribution showed prominent male predominance among cases — 27 cases (90% ) and controls -76 controls (84.44) while females were 10% cases and 15.55% controls. Head and neck cancer is most common in male tobacco users aged between 50 and 65 years.

In 2007, it is estimated that there were 11 800 new cases of oropharynx cancer in the United States, 9310 male and 2490 female. This ratio is seen in most of the published studies in India.

The corresponding prevalences of malignancy reported in a similar study by Muwonge et al. in Kerala, were 57.8% in mules and 42.2% in females.7 Patel et al. from Gujarat reported 75% of oral cancer patients were males.

Bhat et al. found that oral cancers have higher preponderance for males (77%).8 Foreign studies indicate that the prevalence noted are not different from Indian scenario :

Durazzo et al. from Brazil, reported that 68.2% of the study subjects were males. females accounted for 31.8% of cases.5 The higher incidence of oral and oropharyngeal malignancies in males may be due to the increased rate of tobacco and alcohol consumption. Moreover, tobacco is consumed by males in both smoking and chewing form. whereas native Indian females usually do not indulge in smoking

***3. Occupation of the patients***

Majority of cases and controls were manual labourers indulged in agriculture and other daily wage works.(73.33% cases and 53.33% controls). Few were involved in automobile and industrial related jobs.

Occupations involving exposure to dust and gas compounds or polluted work environments seem to be most at risk. Those working with asbestos, wood dust, ~ cement dust and tar seem to have an increased risk, compared with controls, for developing laryngeal carcinoma.

In oropharyngeal cancers, Increases are seen in the textile industry, especially in carpet installers due to the use of formaldehyde, and also in those involved in fossil fuel, semiconductor manufacture and heavy machinists. The association between farming and lip cancer has been attributed to ultraviolet exposure

***4. Residence of patients***

70% cases and 67.77 % controls were residing in rural areas while 30% cases and 29% controls residing in urban areas. In those dwelling in citics, there is chance for inhalation of regular polluted air. But in our study most of them from rural areas.

***5. Oral hygiene:***

Two third of cases brushed their teeth daily atleast once (66.66%). Only few were using tooth paste, some used house hold materials for brushing. 33.33% were not at all brushing their teeth and so oral hygiene was very poor.

Among controls 86.66 % were having comparatively good oral hygiene and brushed atleast once daily.

Zheng et al. (1993) reported that poor dentition emerged as a strong risk factor for oral cancer:

Balaram et al. (2002) reported that chewing and poor oral hygiene explained 95 per cent of oral cancer of the women and among men.

Rosenquist et al. (2005) studied a possible relationship between oral cancer,. oral hygiene, dental status, oral mucosal lesions and some lifestyle factors.

***6. Literacy rate***

Among cases 60% patients were literate who were able to read and write, while 40% illiterate. Literacy rates were more in controls compared to cases — 71% were able to read and write. Risk factor for oral cancers among non-drinkers is tobacco use and among non smokers is alcohol use.

***7. Socioeconomic status***

Socioeconomic status of patients were poor with monthly family income lo.than 5000 in 40% and in (5000-10000) range in 53.33%. Among controls majority were in (5000-10000) range ~ 37.77%, followed by (<5(XK) for 34.44% and ( 10000 - 15000) for 23.33%.

The study by Conway et al. showed that manual occupational activities, low income, low occupational-social class, low educational attainment and unemployment correlate with increased risk for disease development.

***8. Tobacco Smoking***

28 cases (93.33%) were chronic smokers in which 23 were smokers for more than 30 years. Among controls, 47.77 were smokers while 52.22 % were having negative history for tobacco smoking.

In both groups beedi was the preferred type of smoking. 78.57 % in cases and 55.81 % in controls followed by cigarettes (14.28% in cases and 39.5% in controls). Two each among cases and controls were using cigar. No one was using Pipes or hookah since majority are from poor socioeconomic class and not widely available in our region.

Relative risk which is the incidence of disease among smokers when compared to non smokers was 9.661.

Odds ratio which is a measure of strength of association between a risk factor and outcome was 15.3 and P value showed a statistically significant association for smoking tobacco and pharyngeal cancer in our study.

An Italian study found that the RRs for oral cancer were 5.3 for people who smoked less than 15 cigarettes per day and 14.3 for people who smoked 25 or more cigarettes per day, compared with people who had never smoked (Franceschi et al.1990. The study conducted in Italy and Switzerland mentioned earlier also demonstrated that nondrinkers who smoked 25 or more cigarettes per day had a seven-fold increased risk of oral and pharyngeal cancer compared with nonsmoker (Talamini et al. 1998),

Thus, the risk of laryngeal cancer is reduced by about 60 percent in people who have stopped smoking for 10 to 15 years and is reduced even further in people who have stopped smoking for 20 years or more (Bosetti et al. 2006).

The study conducted in Italy and Switzerland mentioned earlier also demonstrated that nondrinkers who smoked 25 or more cigarettes per day had aseven-fold increased risk of oral and pharyngeal cancer compared with nonsmokers (Talamini et al. 1998).

***9. Alcohol Intake***

76.66% cases were chronic alcohol drinkers in which 69.5% were addicts for 20-30 years. All of them (100%) were using Indian made foreign liquor (Rum, whisky or brandy depending on availability).

Among controls 56.66% were drinkers but in that 54.9% were using Indian , made foreign liquor(Rum, whisky or brandy), 43.13 % were using only wine/beer which had lesser alcohol content. Other forms like Toddy and arrack were not used by any cases and controls due to lesser availability in the region except one control who used Arrack. Relative risk which is the incidence of disease among alcoholics when compared to non alcoholics was 2.042.

Odds ratio which is a measure of strength of association between a risk factor and outcome was 2.512 and P value showed a statistically significant association for alcohol intake and pharyngeal cancer in our study.

Ethanol, in its role as a solvent, may exert its influence by enhancing the contact of tobacco carcinogens with the mucosa of the UADT. There is a need for more studies in India addressing the role of alcohol in various subsites. The possibility of under-reporting of alcohol habit by subjects, especially older subjects, should be borne in mind in interpreting results as alcohol is considered to be a social evil in the conservative Indian society. Thus the effect of alcohol on risk may be stronger than that observed.

Many epidemiological studies conducted over the last three decades in the Americas, Europe, and Asia have provided strong evidence of an association between alcohol and tobacco use (both separately and in combination) and an increased risk of oral and pharyngeal tumors (Blot et al. 1988; Franceschi et al. 1990; Zheng et al. 1990, 2004).

The meta-analysis clearly demonstrated that the RR for oral or pharyngeal cancer increased significantly with increasing amounts of alcohol consumed.Similarly, another study conducted in Switzerland and Italy found that nonsmokers who consumed five or more drinks per day had a five-fold increased risk of these cancers compared with nondrinkers (Talamini et al. 1998).

The relationship between duration of alcohol consumption and risk of oral or pharyngeal cancer is less consistent. Moreover, the effect of drinking cessation on the RR for oral or pharyngeal cancer is unclear. Thus, it appears that the RR for these types of cancer appreciably declines only after 15 to 20 years of abstinence (Hayes et al. 1999).

The effect of combined exposure to alcohol and tobacco on risk of oral and pharyngeal cancer appears to be multiplicative that is, the risk of combined exposure is the product of the increases in risk associated with exposure to either habit.

PAR analyses determined that approximately 80 percent of oral and pharyngeal cancer cases in men and about 65 percent of cases in women can be attributed to alcohol and tobacco use (Blot et al. 1988; Negri et al. 1993; Hayes et al. 1999; Bosetti et al. 2000).

Both alcohol consumption and smoking are major risk factors for laryngeal cancer (IARC 2004; Altieri et al. 2005).

An observation suggests that the risk of laryngeal cancer is highest in those areas of the larynx that come into closest contact with alcohol and tobacco smoke (IARC 2004; Altieri et al. 2005).

In nonsmokers, alcohol may increase the relative risk of laryngeal carcinoma five-fold and has been particularly implicated in supraglottic carcinoma. The effect of smoking and alcohol appears to b e synergistic.

***10. Non smoke tobacco***

56.66 % cases and 18.88 % controls had habit of using non smoke forms of - tobacco. Among that 82.35 % cases used tobacco chewing along with pan (betel quid) with duration of 20-30 yrs in 52.94 patients and among controls having chewing habits 64.7 used pan without tobacco & 35.29 used pan with tobacco. None from cases and controls had history of snuff use.

Relative risk which is the incidence of disease among pan-tobacco chewers when compared to non chewers was 3.30. Odds ratio which is a measure of strength of association between a risk factor and outcome was 5.615 and P value showed a statistically significant association for pan tobacco chewing and pharyngeal cancer in our study.

In India and parts of Asia, oral tobacco is mixed with betal leat, slated limeand areca nut to form a quid called *paan'. The lime lowers the pH which accelerates the release of alkaloids from both the tobacco and areca nut. Chewing paan correlateswith alveolobuccal cancer. Paan is also strongly associated with a premaligant lesion oral submucus fibrosis. -Mork ef al. (2001) concluded that the primary risk factors for oral cancer in men and women are tobacco (including smokeless tobacco) and alcohol use. Jeng et al. (2001) reported that Betel-nut chewing is associated with an increased risk of squamous cell cancer of the head and neck.The chewing of tobacco has been found to be associated with oral cancer in India (Niblock, 1902; Orr, 1933).

***11. Dietary habits - Salted/ Smoked fish or meat***

Among the cases 46.66% have been using regularly salted /smoked dry fish atleast twice a week, but lesser in controls ie 34.44%. Relative risk which is the incidence of disease among those having salted/smoked fish when compared to non takers was 1.4585. Odds ratio which is a measure of strength of association between a risk factor and outcome was 1.66 and P value showed a statistically insignificant association for intake of salted/smoked fish and pharyngeal cancer in our study " There is a marked increased risk of NPC in people who have a childhood diet that contains salted fish. This is thought to be due to the high content of mutagenic chemicals such as N-nitrosamines. Other salted preserved food items have also been associated with an increased risk of NPC. The protective effect of high vitamin E intake in adulthood has been reported. Some studies have shown an increased risk with red meat intake and salted meat. Certainly, traditional southern Chinese foods have been shown to contain carcinogens. Such salted fish contain volatile nitrosamines, _ principally N-nitrosodimethylamine and N-nitrosodicthylamine, both of which have been shown to be carcinogenic in animal studies. It is often difficult to determine the risk of cancer related to cured and smoked foods because they are often salted and cured foods like bacon may also be cooked at a high temperature. All of these may be factors in increasing cancer risk.

The evidence linking cured or smoked meats to colorectal cancer is strong, but it is limited for other types of cancer like pharyngeal or stomach cancer. Studies have shown that the rates of nasopharyngeal cancer are high in areas where eating salt- cured fish or meat is very common.

Morse et al. (2000) concluded in the study an inverse association of fruit intake and the development of oral cancer, particularly in those who use tobacco. It is estimated that intake of fruits and vegetables may lower therisk of development of oral cancer by 30% to 50%.

***12. Histopathology***

| Squamous cell carcinoma was the most common histological type noted in the a study, Majority (49.7%) of the cases were moderately differentiated , followed by well differentiated and poorly differentiated.

The study by Bhat et al. found squamous cell carcinoma in 92%, 4% verrucous carcinoma, 3% adenoid cystic carcinoma, and 1% basal cell carcinoma. Durazzo et al. reported squamous cell carcinoma in 90.3% and glandular carcinoma in 4%,Ahluwalia et al. found squamous cell carcinoma in majority (89.9%) of cases.

## 5. CONCLUSION

Malignanacy of oral cavity and pharynx is predominantly a disease of males,usually occurting in older age groups. Squamous cell carcinoma is the commonest histological variety. Manual labourers and people with poor socioeconomic hackground are more vulnerable group. Tobacco in smoked and non smoked (Chewing with Pan-betel quid) forms,chronic alcohol intake are the important preventable aetiological factors for pharyngeal cancers.

Other aetiological factors are nutritional habits, poor oral hygiene,occupational factors, infections etc.

Quiting cigarette smoking, limiting alcohol drinking, avoiding tobacco chewing, preventing exposure to passive tobacco smoke, environmental carcinogens, screening for HPV, maintaining good oral health, nutritional habits and managing stress could be good primary measures for preventing or delaying HNSCC development.

Finally, due to the well established role of these lifestyle factors in the development of oral, pharyngeal and laryngeal cancers, they should be considered an important cause of avoidable morbidity and mortality in India, and their prevention should be an important target of public health initiative.

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