

## **Tobacco Use Among Oral Cancer Patients in Two Selected Hospitals of Dhaka City- A Case Control Study**

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### **Abstract**

*This case control study was carried out from January, 2010 to June, 2010 to observe the relationship of tobacco use and oral cancer of patients. Total study subjects was 102, out of which in case group was 51 and in control group was the same. The study place was National Institute of Cancer Research and Hospital (NICRH), Dhaka. The required information (age, sex, marital status, tobacco use habit, type of tobacco etc) were collected by direct interview method. Out of 51 patients 68.62% were male and 31.38% were female. The age of the respondent, varied from 25 years to 70 years and majority of the cases were in 50-60 years with mean ages (cases 45.4±12.0 & control, 41.4±11.27). Among the respondents 59.52% had the habit of smoking and 40.48% had the habit of chewing tobacco. There is significant association between smoking and chewing habits with oral cancer. ( $p < 0.001$ , OR 4.2, RR 2). Among the respondents there was a relationship between socioeconomic condition ( $p < 0.004$ ) and the occurrence of the disease. On the other hand, prevention and early detection of oral cancer were effective for treatment. In this study it was observed that people used tobacco also in smoke and smokeless form, smoke forms were cigarette, bidi, hukka etc. And smokeless form were sadapata, jarda, gul. In the present study (82.35% cases were tobacco users compared to 39.2% of the controls ( $p < 0.001$ ) and the chance of developing oral cancer in case group were found more than four times higher than in control group.*

### **Introduction**

Cancer is a global problem. Out of an estimated 5 million deaths annually in the world more than 1 million are attributed to cancer. In Europe and North America under present mortality conditions, about one fifth of the population will die in cancer<sup>1</sup>.

In the United States, cancer of the oral cavity and oro-pharynx represent approximately 3% of all malignancy in men and 2% of all malignancy in women. The American Cancer Society estimates that 28,900 new cases of oral cancer will be diagnosed in 2002 and nearly 74,000 people will suffer from this disease<sup>2</sup>.

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Cancer is appearing as an important public health problem in Bangladesh due to lack of reporting system and undiagnosed cause of cancer. The real situation is still unknown. WHO study estimated that there are 49,000 oral cancer, 71,000 laryngeal cancer and 196,000 lung cancer cases in Bangladesh among those aged 30 years or above in 2004<sup>3</sup>.

Tobacco is the most important cause for oral and oro-pharyngeal cancer. Approximately 90% of people with mouth cancer are tobacco users. People who stop using tobacco, even after many years of use, can greatly reduce their risk of smoking related illness, including mouth cancer. The best way to avoid this cancer is never start smoking or chewing tobacco in any form<sup>4</sup>.

It is estimated that there is approximately 2-2.5 million cases of cancer in India at any given point of time, with around 700,000 new cases being detected each year. Nearly half of these cases will die each year. Although still lower than in developed countries, the age adjusted incidence rate per 100,000 population for all types of cancer for urban India ranges from 106.2-130.4 for men and from 100-140.7 for women. Because of its large population, this provides an enormous disease burden for health services in the country<sup>5</sup>.

The four most frequent cancer in males in India are mouth/oropharynx, oesophagus, stomach and lower respiratory tract (trachea, bronchus, lungs). For women, cancers of the cervix, breast, mouth, oropharynx are most frequent. A number of these cases are highly amenable to primary and secondary prevention<sup>6</sup>.

Tobacco which is widely used in India and in other countries, is a major cause of cancers of the upper digestive and respiratory tracts. It is estimated that 91% of oral cancer in this part of the world are directly related to the use of tobacco<sup>7</sup>.

### Materials and Methods

This hospital based case-control study was carried out at National Institute of Cancer & Research Hospital for cases and controls were taken from Shaheed Suhrawardy Hospital, Dhaka. Study period was from January 2010-June 2010. All the clinically diagnosed and histo-pathologically confirmed oral cancer patients were selected for the study. The sample was selected by purposive sampling technique. A pretested structured questionnaire was used for collection of data. Data were collected by the researcher herself through direct interview of the respondents after taking verbal consent from them. Data analysis was done by using Statistical Package for Social Science (SPSS) for windows version 17.

### Results

A total number of 102 patients were interviewed to explore the extent of different types of tobacco smoking and chewing tobacco habit. The results of this study are as follows:

**Table-1: Comparison of distribution of age between case and control (n=102)**

Age(years)	Group		p-value
	Case(n=51)	Control(n=51)	
<30	2(3.92%)	8(15.60%)	
30-40	15(29.41%)	16(31.37%)	
40-50	20(23.52%)	15(29.41%)	
50-60	17(33.35%)	10(19.60%)	
>=60	5(9.80%)	2(3.90%)	
Mean±SD	55.49±17.5	51.45±16.28	0.055

Data were analyzed using student's t-test. Level of significance was 0.05. All the age categories were almost identically distributed between groups. t-test done to analyze the data demonstrated that there was no significant difference between groups in terms of age (p=0.055) [Table-1]

**Table-2: Comparison between tobacco users and oral cancer (n=102)**

Type	Case(Oral cancer Present)	Control (Oral cancer absent)	Relative Risk (RR) (95% CI)
Tobacco users	37	20	2.06
Not Tobacco users	14	31	
Total	51	51	

From this table we found relative risk 2.06. So there is significant association between the tobacco users and oral cancer. As relative risk greater than one is considered to be significant [Table-2]

**Table-3: Association between tobacco use and oral cancer (n=102)**

Tobacco use	Case Group (n=51)	Control Group (n=51)	$\chi^2$	df	p value	OR (95% CI)
Yes	37(72.54%)	20(39.21%)	14.5	1	<0.001	4.09 (1.9-8.9)
No	14(27.4)	31(60.78%)				

In case group 72.54% were tobacco users compared to 39.21% of controls. The chance of developing oral cancer was found to be more than 4 times (95% CI=1.9-8.9) higher in cases than in controls [Table-3]

**Table-4: Association between type of tobacco use and oral cancer (n=62)**

Type of tobacco use	Case (n=42)	Control (n=20)	$\chi^2$	df	P-value
Smoking	25(59.52%)	10(50%)	0.397	1	0.529
Chewable	17(40.47%)	10(50%)			

To explain the association between type of tobacco use and oral cancer, here approximately 59.52% of the cases and 50% of the controls were the smokers. The rest of the cases (40.47%) and (50%) used chewable tobacco (p=0.529) [Table-4]

**Table-5: Association between type of smoking and oral cancer (n=35)**

Type of smoking	Case(n=25)	Control(n=10)	$\chi^2$	df	p value
Cigarette	13(52%)	8(80%)	1.20	2	0.549
Bidi	11(44%)	2(20%)			
Hukka	1(4%)	00			

In cases 52% were cigarette smokers, 44% were bidi smokers, and 4% hukka smokers and in control 80% were cigarette smoker, 20% were bidi smokers and their was no hukka smoker. The type of smoking was not observed to associate with the development of oral cancer as indicated by  $p>0.05$  [Table-5]

**Table-6: Association between white tobacco use and oral cancer (n=60)**

White tobacco use	Case (n=40)	Control (n=20)	$\chi^2$	df	p-value
Yes	6(15.1%)	6(30%)	1.9	1	0.152
No	34(85%)	14(70%)			

15.1% of the cases and 30% of the controls had the history of white tobacco use. No significant association was found between white tobacco use and oral cancer ( $p=0.152$ ) [Table-6]

**Table-7: Association between use of jarda and oral cancer (n=51)**

Use Jarda	Case(n=31)	Control(n=20)	$\chi^2$	df	p-value
Yes	16(51.62%)	10(50%)	0.66	1	0.294
No	15(48.38%)	10(50%)			

In this study 51.62% of the cases and 50% of the controls were jarda users. The cases and controls were no different in statistical terms with respect to use of jarda ( $p=0.294$ ) [Table-7]

**Table-8: Association between use of gul and oral cancer (n=51)**

Use Gul	Case(n=31)	Control(n=20)	$\chi^2$	df	p-value
Yes	5(16.1%)	00	2.7	1	0.126
No	26(83.87%)	20(100%)			

Here 16.1% of the cases were accustomed to using gul compared to none of the controls. However, the difference between the two groups in terms gul use did reach the level of significance ( $p=0.126$ ) [Table-8]

**Table-9: Mean difference between frequency and duration of tobacco use and oral cancer in cases and controls (n=102)**

Frequency and duration of tobacco use	Case(n=51)	Control(n=51)	p value
Years of white tobacco	17.7±7.39	18.0±6.26	0.935
Frequency of white tobacco used per day	6.86±2.26	3.67±1.86	0.019
Years of smoking	20.4±9.36	25.4±8.34	0.152
Number of sticks used per day	11.3±3.94	8.00±3.59	0.030
Years of gul used	16.0±13.7	00±00	0.0164

Data were analyzed using t-test, level of significance was 0.05

The frequency of white tobacco use per day and number of sticks used daily were found to be significantly higher in case group compared to their control counterpart, ( $6.8\pm 2.26$  vs  $3.67$ ,  $p<0.05$  and  $11.3\pm 3.94$  vs  $8.00\pm 3.59$ ,  $p<0.05$  respectively). Years of white tobacco use, years of smoking and years of gul use did not demonstrate any significant difference with oral cancer ( $p>0.05$  in each case).

**Discussion**

In this study the highest number of patients was in the age group of 50-60 years although a considerable number of cases were noted in the age group of 30-40 years and 40-50 years. Wahj reported a clear cut tendency of increased frequency of oral cancer with advanced age. The decrease in the number of cases in the recent study after 60 is almost certainly due to age structure of our population<sup>8</sup>. In the western country the peak occurrence is in the sixth to seventh decade, whereas in Asia it is generally in the 5th and 6th decades.<sup>2</sup>

Among 51 cases 59.52% were habituated to smoking and 40.47% were habituated with chewable tobacco.

In case of chewable tobacco users 15.1% use white tobacco, 51% use jarda, 16.1% use gul. In case of smoking 52% use cigarette, 44% use biri and 4% use hukka. Some respondents had the habit of using both chewable tobacco and smoking. This finding hints at the probability that chewing and smoking habit play causal role in the genesis of oral cancer in our population. In this connection the statement of Hirayama<sup>9</sup>, Wahi *et al*<sup>8</sup> are consistent with the present findings.

In this study it is also found that people used tobacco also in smoke and smokeless forms, smoke forms were cigarette, biri, hukka etc. And smokeless forms were sadapata, jarda and gul. In the present study 82.35% cases were tobacco users compared to 39.2% of controls ( $p < 0.001$ ). Here the chance of developing oral cancer was found to be more than 4 times higher in cases than that in controls ( $p < 0.001$ ).

51% of cases and 50% of controls use jarda. The cases and controls were not significantly different in statistical terms with respect to use of jarda ( $p = 0.294$ ). 16.1% of cases were accustomed to using gul compared to none in controls ( $p = 0.126$ ). Paymaster reported that 81% of 4212 cancer patients used tobacco and of these 36% were chewers, 23% smokers and 22% practiced both chewing and smoking. In this study the mean frequency of tobacco use per day and number of sticks used daily were found to be significantly higher in case group compared to their control counterparts ( $p < 0.05$  and  $p < 0.05$  respectively).

In this study the relative risk has been found 2, that is significant association between the oral cancer and tobacco use. Risk ratio shows that likelihood of developing oral cancer was 4 fold higher in cases compared to that in controls ( $p = 0.001$ ). It can be concluded that the overall status of oral hygiene is very poor in Bangladesh and this has causal relationship with oral cancer.

Summers *et al* performed a study among Bangladeshi women in west Yorkshire in the year 1994, they found that 58% had a poor oral hygiene and never visited a dentist and majority deemed it unnecessary. Morens *et al* concluded that oral hygiene was a risk factor and daily brushing was a protective factor ( $OR = 0.41$ ) for oral cancer<sup>10</sup>.

At the end of the discussion it can be concluded that the number of the patients reported in the hospital are rather limited for various reasons. A population study of this morbid condition covering an increased sample would be more helpful.

## Conclusion

In this case control study among 102 patients 72.54% in cases were tobacco users compared to 39.21% of controls. Relative Risk (RR) is 2.06 and when RR is greater than one it is considered to be clinically significant. That is tobacco use is effective in oral cancer and also from Odds Ratio (OR) we found that there is association between tobacco use and oral cancer ( $P < 0.001$ ,  $OR = 4.09$ ). Male female ratio is 2:1. The highest suffered age group is the fifth and sixth decades of life.

The main tobacco habits are smoking, sadapata, jarda and gul. Almost cent percent patients were accustomed to either smoking or chewing habits of tobacco or both. There is also association between tooth problem with oral cancer ( $p = 0.001$ ) and ( $OR = 4.05$ ). The status of the oral hygiene of the patients is also important.

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