■ *Original Article*

Tobacco related cancers at a tertiary care hospital in Western India

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Abstract

Background: Tobacco related cancers represent the most preventable form of cancer in our society. **Objective:** To determine the proportion of tobacco related cancers among male and female cancer patients at a tertiary cancer care hospital in Western India. **Methods:** This is a retrospective patient record based retrieval type of study which was conducted at a leading tertiary cancer care hospital of Western India. Analysis of case records of all cancer patients admitted at the Shri Siddhivinayak Ganapati Cancer Hospital, Miraj, Maharashtra, (India) over a 24-month period was done. The case records of total three thousand five hundred and two (3502) cancer patients were retreived and analysed to know the proportion of tobacco related cancers. Data obtained ware analysed using SPSS version 16.0 and presented in the form of percentages and proportions. Chi square test of significance was used. **Results:** The total proportions of tobacco related cancers (TRCs) among male and female subjects combined togethe was 22.8%. The proportion of TRCs in male was 33.1%, while in female it was 12.5%. Oral cancers and oesophageal cancers were the leading sites among the TRCs in male and female respectively. **Conclusion:** One third of all cancers in men occurred in the sites associated with tobacco use (TRCs). In women, one eighth of cancers occurred at these sites.

Keywords: tobacco, cancer, tertiary care hospital, Western India

Introduction

Based on International Agency for Research on Cancer Monographs on overall evaluations of carcinogenicity (IARC 1987), anatomical sites of cancer associated with the use of tobacco (Tobacco Related Cancers) include lip, tongue, mouth, pharynx (including oropharynx and hypopharynx), Oesophagus, larynx, lung and urinary bladder.[1] However, in the recent past sufficient evidence has come up to establish a causal association between tobacco use and cancer of other anatomical sites apart from listed in IARC 1987 monograph. The Tobacco Related Cancers represent the most preventable form of cancer in our society. Incidentally, most of the Tobacco Related Cancers occur in the easily accessible parts of body which highlight its potential for easy and early detection. With this background and coupled with the fact that this region (Western India) is an important hub for tobacco manufacturing and consumption the present study was contemplated and pursued to know the proportion of Tobacco Related Cancers among men and women at a tertiary care hospital. Though not in a defined population, the study will provide a fair picture of the problem of cancer associated with the use of tobacco and will abet the health planners and institutions in planning the tobacco control activity in this region.

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Methods

This is a retrospective patient record based retrieval type of study which was carried out in the department of Oncology at a leading tertiary cancer care hospital of Western India (Shri Siddhivinayak Ganapati Cancer Hospital, Miraj, Maharashtra. Approval of the hospital ethical committee was taken before conducting the study. Analysis of case records of all cancer patients admitted to the hospital over a twenty four (24) months period from March 2003 to February 2005 were done. One thousand six hundred and thirteen (1613) cancer patients were registered in the hospital from March 2003 to Feb 2004 and one thousand eight hundred and eighty nine (1889) cancer patients were registered from March 2004 to Feb 2005. Thus, the case records of total three thousand five hundred and two (3502) cancer patients were retreived and analysed to know the proportion of Tobacco Related Cancers.

Inclusion criteria: Records of patients diagnosed to have cancers of oral cavity (lip, tongue, mouth), pharynx (including oropharynx and hypopharynx), oesophagus, larynx, lung and urinary bladder.

Exclusion criteria: Records of patients diagnosed to have malignancy other than those listed in inclusion criteria, non-malignant conditions and incomplete records.

To quality check the process of data entry, 10% random check of entered data against the actual case records was done. The information retreived from the records comprised of gender of patients and their diagnoses. Data obtained was analyzed using SPSS version 16.0 and presented in the form of percentages and proportions. Statistical analysis used is chi square test of significance.

Results

A total of 3502 cancer cases were recorded over a twenty four month period of review. There were 1613 cancer cases reported over a one year period from March 2003 to Feb 2004, while 1889 were reported during March 2004 to Feb 2005. The total proportion of Tobacco Related Cancers among males and females combined were 22.8% (799 out of 3502). Table 1 provide the number and relative proportion of Tobacco Related Cancers (TRCs) according to its specific sites. The anatomical sites of cancer associated with the use of tobacco (TRC) has been taken according to the International Agency for research on Cancer Monograph (IARC 1987) which includes oral cancers (cancers of lips, tongue and mouth), pharynx (including oropharynx and hypopharynx), oesophagus, larynx, lung and urinary bladder.

Sites of tobacco related cancer	No. of cases (%)
In males	
Oral (lips, tongue and mouth)	245 (14.0)
Oesophagus	87 (5.0)
Pharynx (including oropharynx and hypopharynx)	81 (4.6)
Larynx	80 (4.6)
Lung	79 (4.5)
Urinary Bladder	7 (0.4)
Total	**579 (33.1)**
All sites	1749 (100)
In females	
Oesophagus	76 (4.3)
Oral (including lips, tongue and mouth)	68 (3.9)
Lung	34 (1.9)
Pharynx (including oropharynx and hypopharynx)	31 (1.8)
Larynx	6 (0.3)
Urinary Bladder	5 (0.3)
Total	**220 (12.5)**
All sites	1753 (100)

In male, the proportion of TRCs was 33.1% (579 out of 1749). Oral cancers were the leading site contributing to 42.3% of all the TRCs. Further, the two leading sites oral cavity and oesophagus contributed 57.3% of the total TRCs in male. Incidentally, the top five leading sites among all the cancers in male subjects were taken by TRC. This shows the load of TRCs among men in the present study.

In female, the proportion of TRCs was 12.5% (220 out of 1753). The three leading sites among all the TRCs were oesophagus, oral cavity and lung that contributed 81% of all the TRCs. Only oral cavity and oesophagus found place in top five leading sites of all cancers in female.

Cancers of the urinary bladder formed a small fraction of the TRCs in both male and female subjects. Table 2 illustrates relative proportion of TRCs of different population based cancer registries. In males, the relative proportion (%) of TRC ranged from

33.4% in Bangalore to 50.6% in Ahmedabad. In females, the relative proportion of (%) of TRC ranged from 10.7% in Delhi to 15.2% in Bangalore and Chennai.

Population based cancer registry*	Males TRCs (%)	Females TRCs (%)
Bangalore	33.4	15.2
Barshi	36.8	14
Bhopal	47.6	13.8
Chennai	41.7	15.2
Delhi	39.1	10.7
Mumbai	40.5	14.7
Ahmedabad	50.6	14.9
Present study	33.1	12.5

** The Government of India through the National Cancer Registry Programme has a network of population based cancer registries (PBCR) across the country which provides data on the magnitude and patterns of cancer.*

Discussion

Each year in India an estimated total of 7-9 lakh new cancer cases are detected.[2] Based on the estimation of National Cancer Registry Programme (NCRP), the number of newly diagnosed Tobacco Related Cancers each year in India has been approximately 2.5 lakh.[2] In our study, TRCs constitutes 33.1% of all cancers in males and 12.5% in females. Based on Cancer statistics provided by the population cased cancer registries (henceforth called as PBCR), the proportion of TRCs among men ranged from 33.4% to 50.6%, while in women it ranged from 10.7% to 15.2%.[1] Our findings are in agreement with different PBCR. High proportion of cases among males may be due to high prevalence of tobacco consumption in all forms among males. Comparatively females in Indian society are less indulged in tobacco smoking. The Global Adult Tobacco Survey India (GATS INDIA) 2009-2010 has corroborated this fact. The report revealed that the prevalence of overall tobacco use among Indian males is 48% and that among Indian females is 20%.[3] It further revealed that, prevalence of smoking among males is 24% whereas the prevalence among females is only 3%.[3] Epidemiological studies around the world have provided sufficient evidence that tobacco smoking causes cancer of the respiratory tract and the upper digestive tract[2]. Similarly, smokeless tobacco consumption including the forms commonly used in India and Nepal (and other South Asian countries), has been demonstrated to cause oral cancers (including the lips, tongue, mouth) and other head and neck cancers.[2] Further, nearly 90% of oral cancers in South East Asia are linked to tobacco chewing and tobacco smoking.[4] In the present study, oral cancers constituted nearly 42% (245 out of 579) of all the TRCs among males and were the leading site for overall cancers and Tobacco Related Cancers in them. Higher proportion of oral cancers may be because of the pattern of tobacco consumption among males in India. Even though cigarette smoking is the dominant form of tobacco use globally; in the Indian context, smokeless tobacco use is the dominant form.[3] This fact has been substantiated by the GATS INDIA which revealed that, extent of use of smokeless tobacco products among males and females are much higher as compared to use of smoking tobacco products in them.[3] Khaini followed by gutkha are the most commonly used smokeless tobacco products[3]. They are either chewed or placed under lip or against the cheek from where it is gradually absorbed after dilution with saliva.[5] Smokeless tobacco contains over 2000 chemicals, many of which have been directly related to cause cancer.[5] More evidences has established a causal association between cigarette smoking and cancers of the nasal cavities and the nasal sinuses, Oesophagus (adenocarcinoma), stomach, liver, kidney (Renal Cell Carcinoma), uterine cervix and myeloid leukaemia.[1]

India is second largest consumer of tobacco products and third largest producer of tobacco in the world[3]. More than one-third of adults in India use tobacco in some form or the other.[3] More than 75% of tobacco users, both smokers as well as smokeless tobacco users are daily users of tobacco and their mean age at initiation (for age group 20-34 years) is 17.8 years.[3] Thus, tobacco addiction starts at a young age with a large proportion of users initiating tobacco use before the age of 18. Various studies have demonstrated that tobacco use among school going children in India is very high.[6, 7, 8] India global youth tobacco survey, 2006 confirmed the high prevalence of tobacco usage in school going children (among 13-15 years).[9] This is an alarming trend towards increased tobacco use in India. Coupled with the fact that India is a second most populous country in the world, this trend will escalate the burden of Tobacco related Cancers in

India and the resultant increase in global burden as well. The situation calls for urgent action, taking into consideration its implications on public health including the massive health-cost burden. The silver line is that TRCs are amenable to primary prevention (by control of tobacco consumption they represent the most preventable form of cancer) and secondary prevention (as most of the TRCs occur in most easily accessible anatomical parts, thus, rendering its early and easy detection.).

Conclusion

The study findings amply revealed the higher proportion of tobacco related cancers especially among men. One third of all cancers among men occurred in the sites associated with tobacco use (TRCs). In women, one eight of cancers occurred at these sites.

Acknowledgement: Shri Siddhivinayak Ganapati Cancer Hospital, Miraj (India) for allowing us to conduct the study.

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