

**Original article**

# PROFILE OF CANCER CASES AT A TERTIARY CARE LEVEL TEACHING HOSPITAL IN RURAL WESTERN MAHARASHTRA, INDIA

Jayant D Deshpande<sup>1</sup>, Kailash K Singh<sup>2</sup>, Deepak B Phalke<sup>3</sup>**Financial Support:** None declared**Conflict of interest:** None declared**Copy right:** The Journal retains the copyrights of this article. However, reproduction of this article in the part or total in any form is permissible with due acknowledgement of the source.**How to cite this article:** Deshpande JD, Singh KK, Phalke DB. Profile of Cancer Cases at a Tertiary Care Level Teaching Hospital in Rural Western Maharashtra, India. Natl J of Community Med 2012;3(4):607-11.**Author's Affiliation:**<sup>1</sup>Associate Professor, <sup>3</sup>Professor and Head Department of Community Medicine, <sup>2</sup>Professor and Head, Department of Radiotherapy & Oncology Rural Medical College, Pravara Institute of Medical Sciences, Loni, Maharashtra, India**Correspondence:**Dr. Jayant D. Deshpande  
Email: drjayant10@gmail.com**Date of Submission:** 12-6-12**Date of Acceptance:** 18-7-12**Date of Publication:** 30-12-12

## ABSTRACT

**Background:** Cancer is one of the major public health problems worldwide. Prevalence and pattern of cancer is known to vary from region to region. Epidemiological information on cancer including the pattern is an important basis for determining the priorities for cancer control in any population group.**Objective:** Present work is an attempt to study magnitude, profile and some epidemiological aspects in relation to cancer cases at a tertiary care level teaching hospital in rural area.**Method:** All records were studied and analyzed. A total of 1106 patients were treated during the period studied. A proforma was used to collect data such as age, sex, place of residence, type of cancers and treatment given. The data collected were entered into MS-Excel sheets and analysis was carried out. The information obtained was tabulated analyzed using the software GraphPad Instat demo version.**Results:** A total of 1106 cancer patients were treated during the January 2010 to December 2010. Among these, 626(56.60) were females and 480(43.39) were males. In males, the common cancers were oral cavity cancers, lung cancers and GIT cancers. The most common cancers among females were the cervical carcinomas, which constituted 32.10% of the total number of cancers cases followed by cancers of breast. Almost 2/3rd of cases occurred in the age group of 41 to 70 years. Maximum frequency was observed in 51-60 year age group in both sexes. Maximum numbers (74.59%) of the cases were from rural area. The main methods of cancer treatment were surgery, chemotherapy and radiotherapy, used alone or in combination.**Conclusion:** Tobacco and alcohol related cancers predominated in males. In females, cervical cancer predominated over breast cancer. Human behavior is a major determinant in the successful control of cancer. Understanding cancer magnitude, risk and trends will be of help in cancer control.**Keywords:** Cancer, profile, rural area

## INTRODUCTION

Cancer is one of the major public health problems worldwide. Prevalence of cancer is known to vary from region to region. The rapid socioeconomic changes have affected the prevalence and pattern of cancer. The burden of cancer is growing, and cancer is one of the

leading causes of death worldwide. In the developing countries cancer is among the ten commonest causes of mortality. Deaths from cancer in the world are projected to continue to rise, with an estimated nine million people expected to die from cancer in 2015 and 11.4 million in 2030.<sup>[1]</sup>Epidemiological observations indicate that environment and lifestyle are the

major determinants of the geographical patterns of cancer.<sup>[2]</sup> Recent studies have reported that approximately 0.8 million new cancer cases are reported every year in India.<sup>[3]</sup> Study of the magnitude and pattern of cancer is the first step in determining clues to the cause(s) of cancer and in having a baseline to plan and assess control measures. Information on overall pattern of cancer is helpful for identifying cancers that have the greatest impact on different age groups. Epidemiological information on cancer including the pattern is an important basis for determining the priorities for cancer control in any population group. With this background in mind present work is an attempt to study magnitude, pattern and some epidemiological aspects in relation to cancer cases at a tertiary care level teaching hospital in rural area.

## MATERIALS AND METHODS

The records of all diagnosed cases of cancers from January 2010 to December 2010 were retrieved from the files of Outpatient Department (OPD) and admitted patients at a tertiary care level teaching hospital situated in rural area of western Maharashtra. The study population was from the rural area around Loni in places like Kolhar, Kopargaon, Shrirampur, Sangamner, Rahuri, Shirdi, Babhleshwar etc. A good number of cases were referred from peripheral health centers. All records were studied and analyzed. A total of 1106 patients were treated during the period studied. A proforma was used to collect data such as age, sex, place of residence, type of cancers and treatment given. The data collected were entered into MS-Excel sheets and analysis was carried out. The information obtained was tabulated analyzed using the software GraphPad InStat demo version.

## RESULTS

The total numbers of all diagnosed cancer cases between periods studied were 1106. Among these, 626 (56.60 %) were females and 480(43.39 %) were females.

**Table 1: Sex wise distribution of cancer cases**

Type of cancer	Female (%)	Male (%)	Total (%)
Cervical cancer	201(32.10)	0(0.00)	201(18.17)
Breast cancer	143(22.84)	4(0.83)	147(13.29)
Lung cancer	19(3.03)	42(8.75)	61(5.51)
Oral cavity	67(10.70)	155(32.29)	222(20.07)
GIT* cancer	32(5.11)	68(14.16)	100(9.04)
Female genital tract# cancer	61(9.74)	0(0.00)	61(5.51)
Male genital tract cancer	0(0.00)	32(6.66)	32(2.89)
Others	103(16.45)	179(37.29)	282(25.49)
<b>Total</b>	<b>626(100)</b>	<b>480(100)</b>	<b>1106(100)</b>

\*Gastrointestinal tract; #Ovary/Vulva/ Endometrium

The most common cancers among females were cervical carcinomas, which constituted 32.10% of the total number of cancers cases followed by cancers of breast.

In males, the common cancers were oral cavity cancers, lung cancers, GIT cancer and others. Others include carcinoma of brain, skin, thyroid, parotid, urinary bladder, lymphomas, leukemia's, renal cell carcinoma, hepatocellular carcinoma and bone tumors. There were 50(4.52%) cases of brain tumor, 34 (3.07%) cases of urinary tract malignancy, 36(3.25%) cases of bone tumor, 23(2.07%) cases of Hodgkin's disease and 13(1.17%) cases of leukemia's. In both the sexes, the most common site among all gastrointestinal malignancies was the oesophagus followed by gastric cancer.

**Table 2: Age wise distribution of cancer cases**

Age Groups (yrs)	Cervical cancer	Breast cancer	Lung cancer	Cancer of Oral cavity	GIT cancer	Female genital tract cancer	Male Genital Tract cancer	Others
0 to 20	1(0.40)	0(0.00)	0(0.00)	1(0.40)	1(1.00)	1(1.63)	0(0.00)	18(6.38)
21 to 30	4(1.99)	5(3.40)	0(0.00)	6(2.70)	6(6.00)	0(0.00)	4(12.50)	34(12.05)
31 to 40	34(16.91)	33(22.44)	7(11.47)	37(16.66)	12(12.00)	5(8.19)	1(3.12)	27(9.57)
41 to 50	54(26.86)	49(33.3)	12(19.67)	49(22.07)	14(14.00)	19(31.14)	6(18.75)	50(17.73)
51 to 60	51(25.37)	29(19.72)	16(26.22)	50(22.52)	26(26.00)	19(31.14)	6(18.75)	68(24.11)
61 to 70	45(22.38)	26(17.68)	21(34.42)	52(23.42)	27(27.00)	11(18.03)	11(34.37)	63(22.34)
71 to 80	10(4.97)	5(3.40)	5(8.19)	20(9.00)	11(11.00)	5(8.19)	4(12.50)	16(5.67)
>80	2(0.90)	0(0.00)	0(0.00)	7(3.15)	3(3.00)	1(1.63)	0(0.00)	6(2.12)
<b>Total</b>	<b>201(100)</b>	<b>147(100)</b>	<b>61(100)</b>	<b>222(100)</b>	<b>100(100)</b>	<b>61(100)</b>	<b>32(100)</b>	<b>282(100)</b>

Figure in the paranthesis indicate percentage

Almost 2/3rd of cases occurred in the age group of 41 to 70 years. Maximum frequency was observed in 51–60 year age group in both sexes. However, it is worthwhile to take a note that from 31 years and above age group onwards Cervix and Breast predominates the leading sites in females. In 31 and above age group Oral Cavity, GIT and lung were the leading cancer sites in males. The frequency of cancers reduced at the extreme of ages in both the sexes.

The present tertiary care level teaching hospital is situated in rural area and the study population was mainly from the rural area around Loni.

Majority of these patients belong to low socioeconomic group with rural background.

Hence maximum numbers (74.59) of the cancer cases in the present study were from rural area.

**Table 3: Place wise distribution of cancer cases**

Type of cancer	Urban	Rural	Total
Cervical cancer	36(12.81)	165(19.51)	201(18.17)
Breast cancer	48(17.08)	99(12.00)	147(13.29)
Lung cancer	19(6.76)	42(5.09)	61(5.51)
Oral cavity	56(19.92)	166(20.12)	222(20.07)
GIT cancer	26(9.25)	74(8.96)	100(9.04)
Female genital tract cancer	18(6.40)	43(5.21)	61(5.51)
Male genital tract cancer	9(3.20)	23(2.78)	32(2.89)
Others	69(2.45)	213(25.81)	282(25.49)
Total	281(100)	825(100)	1106(100)

\*Ovary/Vulva/Endometrium

**Table 4: Treatment wise distribution of cancer cases (Multiple responses)**

Type of cancer	Surgery (%)	Chemotherapy (%)	Radiotherapy (%)
Cervical cancer(n=201)	33(16.41)	155(77.11)	147(73.13)
Breast cancer(n=147)	26(17.68)	117(79.59)	104(70.74)
Lung cancer(n=61)	20(32.78)	29(47.54)	15(5.31)
Oral cavity(n=222)	40(18.01)	129(58.1)	124(55.85)
GIT cancer(n=100)	28(28)	60(60)	45(45)
Female genital tract cancer (n= 61)	11(18.03)	37(60.65)	21(34.42)
Male genital tract cancer(n=32)	14(43.75)	15(46.87)	8(25)
Others(n=282)	89(31.56)	119(42.19)	105(37.23)

The most common cancer treatment options were surgery, chemotherapy, and radiation therapy. The choice of therapy depends upon the location and grade of the tumor and the stage of the disease, as well as the general state of the patient. The majority of cervical cancer patients having poor general condition and extensive local disease in our setting were treated with palliative radiation therapy / chemotherapy. Adjuvant chemotherapy was offered to patients with stage I, II and III breast cancer after surgical removal of the tumor. Local therapies like surgery and radiation therapy were not options for stage IV breast cancer patients. A systemic treatment with chemotherapy drugs or hormonal drugs was the primary treatment for stage IV breast cancer. Surgical excision (removal) of the tumor was recommended if the tumor was small in case of oral cancer. Radiation therapy with or without chemotherapy is often used in conjunction with surgery, or as the definitive radical treatment, especially if the tumour was inoperable. Chemotherapy was useful in oral cancers when used in combination with other treatment

modalities such as radiation therapy. Common methods of treating gastrointestinal cancer include surgery, chemotherapy and radiation therapy. For oesophageal cancer, chemotherapy was given after surgery, before surgery or if surgery was not possible. Radiotherapy was given before, during or after chemotherapy or surgery. Radiation therapy was used to treat most of solid tumor, including cancers of the brain, breast, cervix, larynx, lung, pancreas, prostate, skin, stomach, uterus, or soft tissue sarcomas. Radiation and chemotherapy was used to treat leukemia and lymphoma.

## DISCUSSION

The pattern of cancers differs in various part of same country. A general way of assessing the dimension of the cancer problem in a given cancer hospital/centre is the number of cancer diagnoses per year in the concerned hospital. It is observed that cancers are increasingly seen in both genders and all the age groups due to a complex interaction of various risk factors.

Studies on incidence or risk for development of the disease pattern provide useful summary of disease burden. Several studies reported trends in cancer incidence for various sites. [4],[5]

Maximum numbers of patients were found in the 41 to 70 years age group (80.31 %). Present study shows female preponderance (Males 43.39% and females 56.60%). It is because of more female cancers of female genital organs, breast and thyroid. Talukder (2007) also reported female preponderance. [6] The age-standardized rates (ASR) for cancer (all sites) in Hyderabad were 91.6/100,000 in males and 96.0/100,000 in females. [7] Contrary to present study, Mehrotra et al (2008) reported male: female sex ratio of 1.5:1 in North India. [8]

Results of the present study showed that tobacco and alcohol related cancers predominated in males. Carcinoma of oral cavity, oesophagus, stomach, oropharynx, larynx and urinary bladder comprised more than 50% of all malignancies in males. In present study Oral cavity (32.29%) cancer was the most frequent cancer diagnosed in men and cervical cancer (32.10%) was the most frequent in women. Cancers, namely those of oral and lungs in males and cervix and breast in females, account for over 50% of all cancer deaths in India. [9] In hospital based study from Karnataka; Kalyani et al (2010) reported predominance of Oral cavity and upper gastrointestinal cancers in both genders and in females' predominance of cervical cancer over breast cancer. [10]

Bhurgri et al (2005) reported that the most common malignancies in males were oral cavity (11.8%), lymphoma (10.6%), lung (8.0%) and urinary bladder. [7]

Early marriage, lower socioeconomic status of women, education, age at first childbirth and parity among the local population are important risk factors for cervical cancer. Higher prevalence of oral cavity cancers is due to increased tobacco use in rural areas of India and the high prevalence of the use of smokeless tobacco among younger adult men. In rural area chewing tobacco is also very popular in a mixture such as pan masala or pan chewed with salted lime, chewed with aracca nut or as snuff, mishri, and gutka. The cause of high prevalence of cancer in rural India is due to the combination of lack of awareness among people, self neglect, late presentation, prevalence of quacks who do not have any knowledge of cancer and its management, prevalent tobacco and alcohol use,

poverty and limited resources. In the rural areas, many people consider cancer as communicable infectious disease and consider it as a taboo for the family which leads to isolation. [11] In India it has been estimated that roughly one third of women and two-thirds of men use tobacco in one form or another. [12] Oral and pharyngeal cancers have a high incidence in South Asia, even among women. In this area, the oral use of smokeless tobacco is considered the predominant risk factor for these cancers, especially oral cancer. [13] Individual people can do much to reduce their risk of developing cancer. It is now established that cancer is principally caused by environmental factors, of which the most important are tobacco, dietary factors, body mass and physical activity and exposure in the workplace. [14] The main methods of cancer treatment were surgery, chemotherapy and radiotherapy, used alone or in combination. Two large-scale randomized trials from the United States and Europe have demonstrated the benefits of adjuvant concurrent chemoradiotherapy (CCRT) after radical surgery cancer patients. [15, 16] Adjuvant radiotherapy reduces tumor recurrence and prolongs survival. [17] Human behavior is a major determinant in the successful control of cancer.

## CONCLUSION

Tobacco and alcohol related cancers predominated in males. In females, cervical cancer predominated over breast cancer. This is only a hospital records based study. However this study provide leads for further etiological research, identify cancers that are more common in rural area and helps to take-up cancer preventive measures and screening programmes in early detection of cancer. Understanding cancer magnitude, risk and trends will be of help in cancer control.

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## REFERENCES

1. WHO. <http://www.who.int/mediacentre/factsheets/fs297/en/index.html>. Assessed on 10th May 2012.
2. Magrath I, Litvak J. Cancer in developing countries: opportunity and challenge. *J Nat Cancer Inst* 1993; 85:862-74.
3. Reddy KS, Shah B, Varghese C, Ramadoss A. Responding to the threat of chronic diseases in India. *Lancet* 2005; 366, 1746-51.
4. Elango JK, Gangadharan P, Sumithra S, Kuriakose MA. Trends of head and neck cancers in urban and rural India. *Asian Pac J Cancer Prev* 2006; 7:108-12.
5. Murthy NS, Chaudhry K, Saxena S. Trends in cervical cancer incidence: Indian scenario. *Eur J Cancer Prev* 2005; 14:513-8.
6. Talukder MH, Jabeen S, Shaheen S, et al. Pattern of Cancer in young adults at National Institute of Cancer Research and Hospital (NICRH) Bangladesh. *Mymensingh Med J* 2007; 16: 28-33.
7. Bhurgri Y, Bhurgri A, Pervez S, Bhurgri M et al. Cancer profile of Hyderabad, Pakistan 1998-2002. *Asian Pac J Cancer Prev*. 2005; 6(4):474-80.
8. Mehrotra R, Pandya S, Singhla M, Srivastava D, Singh M. Spectrum of Malignancies in Allahabad, North India: A Hospital-based study *Asian Pacific J Cancer Prev* 2008; 9: 525-528
9. National Cancer Registry Program. Consolidated report of the population based cancer registries 1990-1996. New Delhi: Indian Council of Medical Research; 2001.
10. Kalyani R, Das S, Bindra Singh MS, Kumar H. Cancer profile in the Department of Pathology of Sri Devaraj Urs Medical College, Kolar: a ten years study. *Indian J Cancer*. 2010; 47:160-5.
11. Dinshaw KA, Shastri SS, Patil SS. Cancer control programme in India: Challenges for the new millennium. *Health Administrator* 2005; 1: 10-13
12. World Health Organization. Tobacco or Health, a Global Status Report. WHO, Geneva, 1997.
13. Moore SR, Johnson NW, Pierce AM, Wilson DF. The epidemiology of mouth cancer: a review of global incidence. *Oral Dis*. 2000; 6: 65-74.
14. Magrath I, Litvak J. Cancer in developing countries: opportunity and challenge. *J Natl Cancer Inst* 1993, 85, 862-74.
15. Bernier J, Domenge C, Ozsahin M, et al. Postoperative irradiation with or without concomitant chemotherapy for locally advanced head and neck cancer. *N Engl J Med* 2004; 350: 1945-1952.
16. Cooper JS, Pajak TF, Forastiere AA, et al. Postoperative concurrent radiotherapy and chemotherapy for high-risk squamous-cell carcinoma of the head and neck. *N Engl J Med* 2004; 350:1937-1944.
17. Pignon JP, Bourhis J, Domenge C, et al. Chemotherapy added to locoregional treatment for head and neck squamous-cell carcinoma: three meta-analyses of updated individual data. MACH-NC Collaborative Group. Meta-analysis of chemotherapy on head and neck cancer. *Lancet* 2000; 355:949 -955.