



A RETROSPECTIVE STUDY ON PATTERN AND MAGNITUDE OF VARIOUS CANCERS AND ASSOCIATED RISK FACTORS AT TERTIARY CARE CENTRE IN CENTRAL INDIA

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ABSTRACT

Background- Knowledge regarding regional variations of cancer burden and their associated risk factors will help to specify priorities and appropriate management. The present study was thus conducted at a tertiary care centre to assess the burden of various cancers and associated risk factors.

Methodology- This study was conducted as a record based retrospective study from 1st January 2015 to 31st December 2019. Data regarding sociodemographic variables and occurrence of cancer were analysed in terms of proportions of various cancers and presence of risk factors.

Results- records of 10811 patients were retrieved from Cancer registry from year 2015 to year 2019. Mean age of patients in present study was 50.04 ± 17.07 years. Most common cancer reported in present study in Central India was oral cancer (31.8%) followed by cancer cervix (15.2%). Cancer breast was the third most common cancer in present study. Gutkha was the most common risk factor for oral cancer (99.1%) and about 81.8% females with cervical cancer were addicted to gutkha, Bidi smoking and cigarette smoking were the most common risk factor associated with lung cancer in 99.6% and 99.2% cases respectively.

Conclusion- This hospital-based study describes the pattern of various cancers and associated risk factors in Central India. Most common risk factors among both male and females were tobacco chewing and gutkha and the associated cancers were head and neck cancers. Therefore, strict legislation on tobacco and related products must be brought into action to prevent occurrence of such cancer and associated morbidities and suffering.

KEYWORDS : Cancer, Central India, risk factors, tobacco, Cancer registry

INTRODUCTION-

Non communicable diseases such as Diabetes, cardiovascular diseases, respiratory diseases and cancers are on rise and currently India is facing double burden of diseases i.e. while India is still tackling communicable diseases, non communicable diseases are on rise.^[1] Cancer is one of the important causes of morbidity and mortality in India. According to WHO, Cancer is the second leading cause of death globally, and is responsible for an estimated 9.6 million deaths in 2018. Worldwide, about 1 in 6 deaths is due to cancer and of them approximately 70% of deaths from cancer occur in low- and middle-income countries.^[2] Occurrence of cancer is also associated with tremendous psycho-trauma, social distress and misery not only to the patient but to his family as well.^[3]

The higher incidence is attributed to 5 leading behavioral and dietary risks which include high body mass index, unhealthy dietary habits, lack of physical activity, tobacco use, and alcohol use.^[2] Apart from these factors, some cancers such as cervical and hepatic cancers are due to underlying infections. Cancer presents with various clinicopathological manifestations depending upon location, size and severity of cancer.^[4] Approximately 30–50% of cancers can be readily prevented by primordial and primary prevention strategies. Also its burden can be reduced by early diagnosis and management as not all the cancers are fatal, majority have a high chance of cure if diagnosed early and treated adequately.^[2]

In India, most common cancers amongst men are lung, oral, larynx, oesophagus, and pharynx cancer which are mainly tobacco related whereas amongst females, apart from these, cancer cervix, breast, and ovarian cancers are also prevalent. India is a largest consumer of tobacco and related products and thus have highest prevalence of oral cancer cases in the

world. Tobacco use is responsible for approximately 22% of cancer deaths worldwide.^[5]

Knowledge regarding regional variations of cancer burden and their associated risk factors will help to specify priorities and appropriate management. The present study was thus conducted at a tertiary care centre to assess the burden of various cancers and associated risk factors.

METHODOLOGY-

The present study was conducted as a facility based retrospective study at a tertiary care centre having a hospital based Cancer registry system. Records of all cancer patients registered from 1st January 2015 to 31st December 2019 were retrieved from RCC database and individual patient files.

regarding sociodemographic variables such as age, gender, residence and occurrence of cancer were analysed in terms of proportions of various cancers and presence of risk factors. The identity of patients was kept confidential. Diagnoses of Cancer was based on histopathology, cytology, bone marrow aspirates, peripheral blood counts or a relevant tumor marker. All the cancers were categorized according to the organs affected.

Statistical analysis- Data was compiled using MsExcel and analysed using SPSS 20 software. Data was grouped and expressed as frequency and percentage whereas numerical data was expressed as mean and standard deviation.

RESULTS

The present study could gather data of 10811 patients diagnosed with various cancers from the year 2015 to year 2019 with an annual average of 2162 cases. Of them, maximum i.e. 5761 (53.3%) patients were female whereas

5050 (46.7%) were males. Mean age of patients in present study was 50.04 ± 17.07 years. Jabalpur Medical College caters population from almost all the areas of Jabalpur and estimated population is 12.7 lakhs and thus estimated proportions of cancers was calculated as 0.85 cases per lakh population. The mean age at diagnosis of cancer for females was 48.9 ± 15.52 years which was significantly lower than that of males (51.36 ± 18.6 years) (Table 1).

Table 1- Distribution According To Gender Of Cases

Year	Male		Female		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
2015	585	48.4	624	51.6	1029	11.2
2016	588	48.5	621	51.5	1029	11.2
2017	1276	47.1	1431	52.9	2707	25
2018	1301	45.8	1540	54.2	2841	26.3
2019	1303	45.9	1542	54.1	2845	26.4
Total	5761	46.7	5050	53.3	10811	100

Table 2- Distribution According To Cancers

Site of cancers	Frequency	Percentage
Oral	3443	31.8
Cervix	1638	15.2
Breast	1257	11.6
Lung	872	8.1
Esophagus	640	5.9
Gall bladder	359	0.4
Colorectum	334	3.1
Ovary	255	2.4
Myeloid leukemia	236	2.2
Larynx and trachea	221	2.05
Lymphoid leukemia	186	1.7
CNS	186	3.3
NHL	168	1.6
Stomach	160	1.5
Prostate	111	0.2
Soft tissue	102	1.7
Endometrium	91	0.8
Urinary bladder	80	0.7
Pharynx	80	0.6
Pancreas	62	1.02
Kidney	52	0.7
Multiple myeloma	44	0.4
Thyroid	37	0.3
Hodgkin's lymphoma	25	0.9
GE junction	18	0.2

Most common cancer reported in present study in Central India was oral cancer (31.8%) followed by cancer cervix (15.2%). Cancer breast was the third most common cancer in present study.

Table 3- Presence Of Risk Factors Amongst Patients

Risk factors	Male (n=5761)		Female (n=5050)		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Tobacco chewing	4498	78.1	3371	66.8	7869	72.8
Gutka	4531	78.6	3453	86.2	7984	73.9
Bidi	4982	86.5	673	13.3	5655	52.3
Cigarette	3761	65.3	115	2.3	3876	35.8
Alcohol	3856	66.9	814	16.1	4670	43.2

Overall, the most common risk factors in present study was gutka (73.9%). However, the most common risk factor among males was bidi smoking followed by gutka.

Table 4- Risk Factors In Various Cancers

Site of cancers	Tobacco	Gutkha	Bidi	Cigarette	Alcohol
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Oral (3443)	3376 (98.1)	3411 (99.1)	2636 (76.6)	2018 (58.6)	2298 (66.7)
Cervix (1368)	1022 (74.7)	1119 (81.8)	229 (16.7)	67 (4.9)	121 (8.8)
Breast (1257)	956 (76.1)	996 (79.2)	321 (25.5)	38 (3.0)	155 (12.3)
Lung (872)	836 (95.9)	789 (90.5)	869 (99.6)	865 (99.2)	546 (62.6)
Esophagus (640)	559 (87.3)	562 (87.8)	594 (92.8)	390 (60.9)	534 (83.4)
Gall bladder (359)	159 (42.3)	189 (52.6)	108 (30.1)	48 (13.4)	278 (77.4)
Colorectum (334)	149 (44.6)	97 (29.0)	78 (23.4)	31 (9.3)	78 (23.4)
Ovary (255)	78 (30.6)	92 (36.1)	67 (26.3)	5 (1.9)	79 (31)
Myeloid leukemia (236)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Larynx and trachea (221)	198 (85.6)	197 (89.1)	178 (80.5)	98 (44.3)	29 (13.1)
Lymphoid leukemia (186)	0 (0)	0 (0)	3 (1.6)	1 (0.5)	0 (0)
CNS (186)	36 (19.4)	24 (12.9)	39 (20.9)	23 (12.4)	78 (41.9)
NHL (168)	11 (6.5)	24 (14.3)	27 (16.1)	12 (7.1)	10 (5.9)
Stomach (160)	109 (68.1)	139 (86.9)	129 (80.6)	106 (66.3)	112 (70)
Prostate (111)	79 (71.2)	91 (81.9)	98 (88.3)	75 (67.6)	78 (70.3)
Soft tissue (102)	60 (58.8)	62 (60.8)	71 (69.6)	20 (19.6)	56 (54.9)
Endometrium (91)	55 (60.4)	27 (29.7)	34 (37.4)	2 (2.2)	25 (27.5)
Urinary bladder (80)	67 (83.7)	51 (63.8)	56 (70)	23 (28.8)	64 (80)
Pharynx (80)	56 (70)	53 (66.3)	48 (60)	23 (28.8)	12 (15)
Pancreas (62)	16 (25.8)	19 (30.5)	39 (62.9)	12 (19.4)	41 (66.1)
Kidney (52)	5 (9.6)	4 (7.7)	4 (7.7)	3 (5.8)	3 (5.8)
Multiple myeloma (44)	11 (25)	9 (20.5)	3 (6.8)	1 (2.3)	2 (4.5)
Thyroid (37)	14 (37.8)	15 (40.5)	4 (10.8)	2 (5.4)	1 (2.7)
Hodgkin's lymphoma (25)	2 (8)	3 (12)	4 (16)	1 (4)	1 (4)
GE junction (18)	15 (83.3)	11 (61.1)	16 (88.9)	12 (66.7)	10 (55.5)

In present study, gutka was the most common risk factor for oral cancer (99.1%) and about 81.8% females with cervical cancer were addicted to gutka, Bidi smoking and cigarette smoking were the most common risk factor associated with lung cancer in 99.6% and 99.2% cases respectively.

DISCUSSION

The present study depicts the pattern of various cancers and associated risk factors in Central India based on cancer registry. The information on type of cancer and their risk

factors can be utilized for establishing priorities for cancer control in Central India.

A total of 10811 cancers were registered during the 5 years period from January 2015 to December 2019. Majority of patients in present study were males but the mean age at diagnosis of cancer for females was significantly lower (48.9 ± 15.52 years) as compared to that among males (51.36 ± 18.6 years). These findings were supported by the study of Iqbal et al in which the median age of female patient was approximately 10 years lower than the male median age of presentation.^[4] In a study by Ayub et al, out of 6943 patients, 62.6% were males and only 37.4% were females.^[7] However, in another study at Bangalore, females outnumbered male patients; these findings were contrasting to the findings of present study.^[8]

The incidence and types of cancers depend upon multiple factors such as geographic area, environmental, socio-cultural and lifestyle related factors such as tobacco chewing, smoking, alcohol and various other factors.^[4] Most common cancer in Central India as depicted by present study were oral cancers (31.8%) followed by cancer cervix (15.2%). Cancer breast was the third most common cancer in present study. Tobacco chewing and smoking has been directly related to such high prevalence of cancers especially head and neck cancers which include oral and lung cancer in both males and females. However amongst females, cancer cervix and cancer breast are the common malignancies observed in present study. These findings were supported by Iqbal et al in which Cancer Breast was the second common malignancy among females with median age of 45 year and average annual crude incidence rate of 2.84 cases per lakh population in Kashmir.^[4] Khan et al also documented cancer breast as the second most common malignancy among females in Northern India.^[9] Oesophageal cancers were associated with smoking and alcohol along with tobacco chewing in present study. Agarwal et al also reported esophageal malignancy to be the commonest digestive system cancer in both males (6.0%) & in females (5.1%).^[10] Kumar et al observed association of esophageal carcinoma with smoking, alcohol, malnutrition, poverty, oesophageal injury, achalasia, use of hot beverages, betel nut chewing, chronic gastro-oesophageal reflux, intake of tannin in various form, along with decreased intake of fresh fruits & vegetables.^[11]

Highest occurrence of associated risk factors in present study could be explained by the fact the present study was conducted as a hospital based study however a community based study with house to house survey on risk factors and associated cancer would reveal the better results.

CONCLUSION-

This hospital-based study describes the pattern of various cancers and associated risk factors in Central India. Most common risk factors among both male and females were tobacco chewing and gutkha and the associated cancers were head and neck cancers. Thus majority of cancers are preventable if the risk factors are removed. Therefore, strict legislation on tobacco and related products must be brought into action to prevent occurrence of such cancer and associated morbidities and suffering.

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