

# Cancer Burden in a Tertiary Care Hospital in Andhra Pradesh –A Retrospective Two and Half Years Study

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## Abstract

**Introduction:** Cancer is one of the leading causes of death worldwide and is also one of the major causes of morbidity in both developed and developing countries like India. In 2020, total number of new cases in India was 13, 24, 413 and number of deaths reported was 8, 51, 678. Number of cancer cases is on an increasing trend every year. As resources are very few in our country a well-developed cancer registry and statistics would help in identifying the risk factors for various cancers and thereby preventing their occurrence. **Objectives:** 1) To study the incidence of cancer cases in a tertiary care center with respect to organ system, site, age, gender and type of cancer. 2) To ascertain the leading cancers in a tertiary care hospital and compare the incidence with various other epidemiologic studies. **Materials and methods:** The present study is a Hospital based Retrospective study done from January 2019 to June 2021 for a period of two and half years in Department of pathology, Andhra medical college. A total of 1760 cases are studied during this period. Various demographic details like age and sex are collected along with site and clinical diagnosis for the study. Data was entered and analyzed using MS excel 2013 and pie charts and frequency graphs were plotted for easy analysis of the data. **Results:** Out of 1760 cancer patients' females were 993(56.4%) and 767 were males (43.5%), larger number of the male patients with cancer were in the age group of 51 -60 years and females showed up in the age group of 45 to 55 years. In our study the most common tumors were tumors of Head and neck (oral cavity included) with 491cases (27.89%) followed by cervical cancers with 279 cases (15.8%). In males out of total 767 cases the most common cancer was oral cavity cancers (250cases/32.59%) followed by GIT cancers (140 cases/18.25%) and in females out of 993 cases the most common cancer was cervical cancer(279 cases/28.09%) followed by breast cancers(196 cases/19.73%). **Conclusion:** The present study emphasizes on burden of various cancers at the level of a tertiary care center. In recent years there is an increasing incidence of cancers in females.

**Keywords:** Cancer Burden, Tertiary Care Hospital.

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## INTRODUCTION

Cancer is one of the leading causes of death worldwide and is also one of the major causes of morbidity in both developed and developing countries. Cancers are caused by mutations which can be inherited or acquired through various environmental risk factors [1].

Deaths due to Non communicable diseases [NCD's] are on rise globally. In India NCD's account

for 63% of total deaths out of them cancer was leading cause accounting for about 9% in them [2].

In 2018, there were 18.1 million new cancer cases and 9.5 million deaths worldwide [3].

Cancer accounts to second most common disease causing deaths worldwide after cardiovascular diseases. Every year approximately 0.8 million new cancer cases are reported in India [4]. According to

Globocan survey in 2020, total number of new cases in India was 13, 24, 413 and number of deaths reported was 8, 51, 678. Number of prevalent cases was 27, 20, and 251 [5].

Globally out of 14 million newly diagnosed cancer cases more about 1 million cases were from India [6].

Major risk factors for cancer are lifestyle changes like unhealthy diet, tobacco usage, alcohol consumption and physical inactivity. Some chronic infections are also risk factors for cancer. Approximately 13% of cancers in 2018 were attributed to infectious causes due to HPV, H. Pylori, Hepatitis B and Hepatitis C [7].

According to the recent global cancer observatory studies, breast cancers account for majority of cancers in women, whereas oral cavity cancers were highest in men [5, 8].

Here with this review, in mind the present study is conducted in Department of pathology, King George hospital, Andhra medical college, a tertiary care hospital in Visakhapatnam with an aim to retrospectively study the spectrum of various cancers reported over a period of two and half years from 2019 January to 2021 June.

#### Materials and Methods

The present study is a Hospital based Retrospective study which was conducted from January 2019 to June 2021 for a period of two and half years in Department of pathology, Andhra medical college, Visakhapatnam.

#### INCLUSION CRITERIA

All histopathologically diagnosed malignancy cases from all the systems including trucut biopsy were included in this study.

#### EXCLUSION CRITERIA

Local metastatic cases and old recurrent under treatment cases were excluded from this study.

Various demographic details like age and sex are collected along with site and clinical diagnosis for the study. Data was entered and analyzed using MS excel 2013 and pie charts and frequency graphs were plotted for easy analysis of the data.

#### RESULTS

During our study period total number of cases analyzed in two and half years study were 1760 cases, out of which majority are from Head and neck region (including oral cavity) with 491 cases (27.89%). The second highest number of cancers were of the Female genital tract with 377 cases (21.42%) followed by

Gastrointestinal tract cancers 231(13.12%) and Breast cancers 196(11.13%). 130(7.39%) Central nervous system cancers were reported. 80 cases (4.5%) of skin malignancy, 67 cases(3.8%) of Male genital tract system, 42 cases (2.3%) of lymphoid structures, 42 cases(2.3%) of kidney and lower urinary tract, 35 cancers(1.9%) of liver, pancreas and gall bladder, 32 cases(1.82%) of soft tissue and retro peritoneum, 27 lung cancer cases(1.53%) and 10 cancers of bone (0.57%) were reported. (Table 1, Figure 1).

#### Total cancer cases for the year

In the year 2019, 9748 histopathology specimens (including biopsies) were received out of which 804 were malignancies. In the year 2020, 5025 histopathology specimens were received out of which 610 were cancers and in the year 2021 (January to June), 3124 specimens were received and 335 malignancies were reported in 6 months. (Figure 2).

#### Head and neck cancers

In our study highest number of the cancers were of head and neck of which majority are oral cavity cancers. Most of the oral cavity cancers are seen in the age group of 41-50 years which constitutes 38% of total. (145 cases)(Figure 3)

#### FEMALE GENITAL TRACT

Cervical cancer was the commonest malignancy in Female genital tract consisting of (279 cases, 74%), followed by Ovarian cancers.(74 cases, 20%)(Table 2).

In cervical cancers, the number of cases above 60 years of age is 95 out of (34%) and less than 60 years are 184 out of 279 (65.9%) (Table 3).

#### GASTRO INTESTINAL TRACT

Large intestine is the predominant site of gastrointestinal malignancies which constitutes 39.8%.

Upper Gastro intestinal tract cancers in stomach and oesophagus constitute 87 cases (37.6%), Lower Gastro intestinal tract cancers in small intestine, large intestine and anal canal comprise of 144 cases (62.3%) (Table 4).

#### BREAST CANCERS

Invasive breast carcinoma NST is the predominant variant which constitutes 89% (Table 5). Invasive breast carcinoma showing predominance in females between age group of 41-50 years. (Figure 4).

#### CNS TUMOURS

Central nervous system cancers comprised of 7.2% of total cancers and the most common one were predominantly Meningothelial Meningiomas followed by Glioblastomas. The prevalence highest in the age

group of 45 -65 years with a slight female predominance.

### SKIN CANCERS

Skin cancers are not uncommon and they constitute 4.2% of all the tumours and majority (>85%) of them are well differentiated squamous cell carcinomas. They are seen predominantly in males and in the age group of above 45 years.

### MALE GENITAL TRACT

Large number of the male genital tract cancers was well differentiated squamous cell carcinomas of Penis and majority of them were seen in above 55 years age group.

### URINARY SYSTEM

The kidney and urinary bladder cancers constituted 2.3% of all the cancers and we have reported 7 cases of wilms tumor in pediatric age group,

15 cases of urothelial carcinomas of the bladder, 20 cases of renal cell carcinomas

### Other cancers

Cancers of hepatobiliary system were mostly adenocarcinoma of Gall bladder followed by hepatocellular carcinoma and metastasis to liver.

Soft tissue and retroperitoneal tumours are however diverse in distribution comprising of malignant small round blue cell tumours ,mostly Ewing's sarcoma followed by malignant peripheral nerve sheath tumours.

Lung cancers however were very few and major share of them was constituted by adenocarcinomas. Bone cancers were very few in number and majority of them were osteochondromas.

**Table-1: The distribution of cancer cases system wise (n=1760).**

System	2019	2020	2021 (January to June)	Total	Total system wise%
Head & neck (Including Oral cavity)	236	161	94	491	27.89%
FGT	185	139	53	377	21.42%
GIT	79	103	49	231	13.12%
Breast	99	62	35	196	11.13%
CNS	37	52	41	130	7.39%
Skin	44	18	18	80	4.55%
MGT	31	24	12	67	3.81%
Urinary system	24	7	11	42	2.39%
Lymph Nodes	17	22	3	42	2.39%
Liver, pancreas & GB	19	9	7	35	1.99%
Soft tissue & Retroperitoneal	14	11	7	32	1.82%
Lung	14	9	4	27	1.53%
Bone	5	4	1	10	0.57%
Total	804	621	335	1760	100%

**Table-2: Distribution of cancers in various organs of female genital tract [n=377].**

Site	Total cases	Percentage
Cervix	279	74%
Ovary & fallopian tube	74	20%
Uterus	17	4%
Vagina & vulva	7	2%
Total	377	100%

**Table-3: Showing age wise distribution of cervical cancers [n=279].**

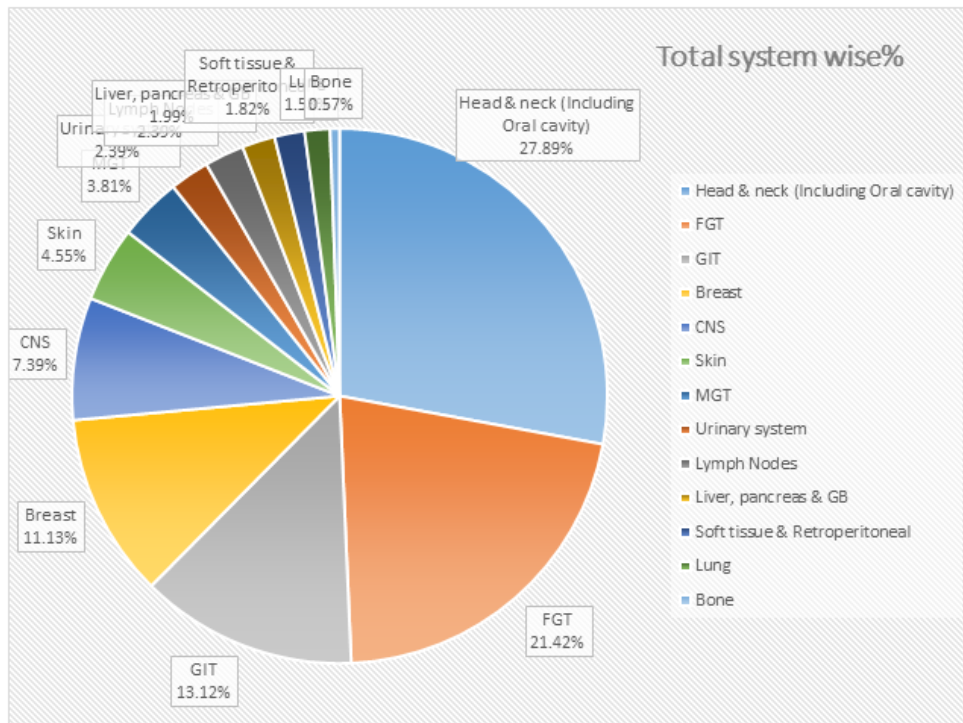
Age	No. of cases	Percentage
>60	95	34%
51-60	70	25%
41-50	65	23%
31-40	39	14%
21-30	10	4%
Total	279	100%

**Table-4: Cancer cases distribution in various parts of GIT.[n=231]**

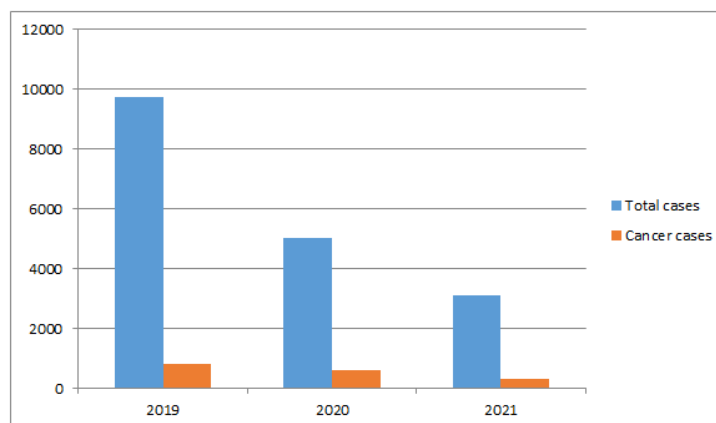
Organ	No. of cases	Percentage
Large intestine	92	39.8%
Stomach	75	32.4%
Small intestine	32	13.8%
Anal canal	20	8.6%
Oesophagus	12	5.2%
Total	231	100%

**Table-5: Showing distribution of various variants of breast cancer [n=196].**

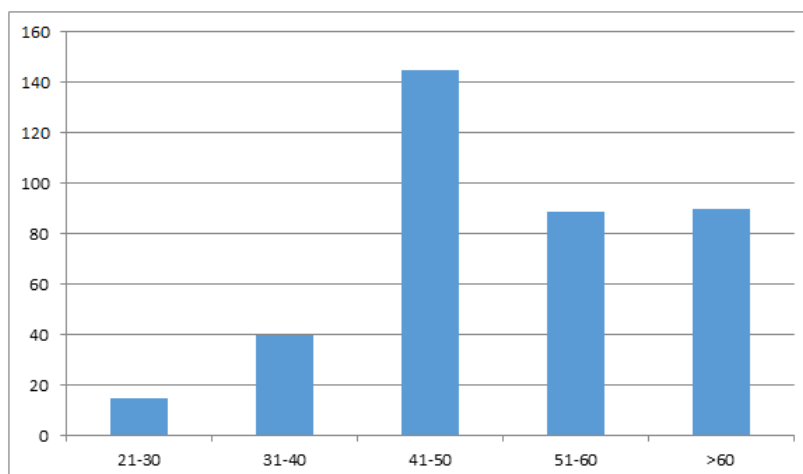
Variants	Cases	Percentage
Infiltrating ductal carcinoma NST	175	89.2%
Lobular carcinoma	9	4.6%
Malignant phyllodes	9	4.6%
Mucinous carcinoma	3	1.5%
Total	196	100%



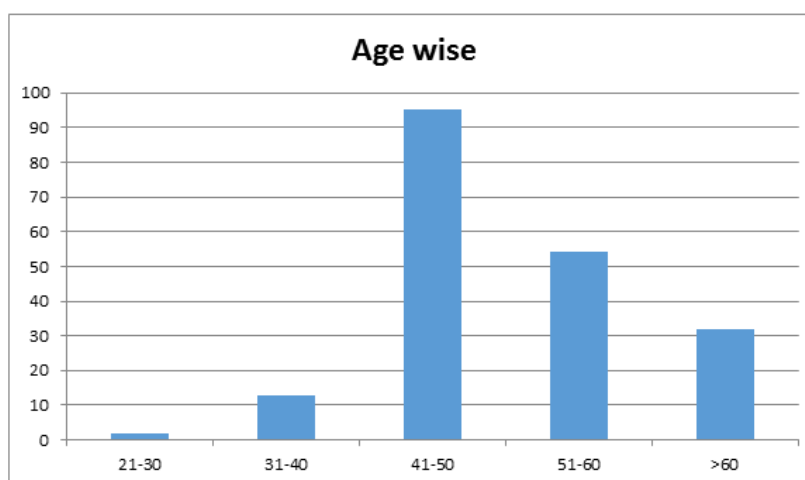
**Fig-1: Pie chart representation of various cancers system wise**



**Fig-2: Depicting the Total number of cancer cases year wise**



**Fig-3: Age wise distribution graph of oral cavity cancers.**



**Fig-4: Age wise distribution of invasive duct carcinomas**

## DISCUSSION

Out of 17897 total cases received in the period of three years, the reported cancer cases were 1760, i.e., 9.83 % of total cases.

### ORAL CAVITY CANCERS

Cancers of oral cavity are the highest number of malignancies with a male predominance. Large no. of SCC cases was on buccal mucosa followed by tongue and hard palate.

Out of all the oral cavity malignancies majority of the cases about (68% of total cases) were moderately differentiated squamous cell carcinomas followed by 20% of cases were well differentiated carcinomas. Poorly differentiated carcinomas constituted 10% of the cases and 2% cases were verrucous carcinomas.

In males, in the present study oral cavity cancers were more common followed by gastrointestinal cancers which are in contrast to the study done by Rajaraman swaminathan *et al*. [9], where

stomach cancers were more frequent in males. Our results were similar to the study done by Hyuna Sung *et al*. [5], where oral cavity cancers were most common in males.

The increased prevalence of oral cavity cancers in India in males is due to tobacco use and betel quid chewing [10, 11].

### Female genital tract

#### Cervix

Majority of the Cervical cancer cases were Large cell non keratinizing squamous cell carcinoma (55%) followed by moderately differentiated squamous cell carcinoma(25%), well differentiated SCC (11%)and the least being cervical adenocarcinoma cases(9%).

Epidemiologic studies show HPV as the major risk factor for cervical cancers kour p *et al*. [12], whereas other important risk factors are low

socioeconomic status, early marriage, high parity and multiple sexual partners.

Cervical cancer incidence was highest in female genital tract cancers similar to the study done by muttappillymyalil *et al.* [13] and in the present study majority of them were Large cell non keratinizing squamous cell carcinomas.

### Ovary

A total of 74 ovarian cancers were reported and majority of them were papillary serous cystadenocarcinomas and they occurred in age group of 35 years to 45 years.

We encountered 17 endometrial adenocarcinomas cases which occurred in the age group of above 65 year old females.

### Breast

In malignancies of the breast, the most common histological subtype was Invasive duct carcinoma of no specific type with 175 cases similar to study done by jaafar makki *et al.* [14], and a large number of them were in the age group of 41 to 50 years similar to the findings of Cherian pushpa mahadevan *et al.* [15]. The key risk factors for developing breast cancers are lifestyle changes like diet, exercise, hormone usage and lactation [16]. No male breast carcinoma cases were reported in our study.

### Gastrointestinal tract

A total of 231 cancer cases of GIT are reported out of which large intestine cancers were maximum with 92 cases (39.8%), 75 cases of stomach cancer (32.4%), 32 cases in the small intestine (13.8%), 20 cases in the anal canal (8.6%), 12 oesophageal cancer cases (5.2%). 140 cases were males and 91 cases were seen in females.

Majority of colon cancers were well differentiated adenocarcinomas followed by moderately differentiated adenocarcinomas mostly occurring in age group of above 50 years with a slight male predominance.

Maximum number of stomach cancers were well differentiated adenocarcinomas occurring age group of >50 years with male preponderance, followed by moderately differentiated adenocarcinomas and signet ring cell carcinomas.

Out of the total 1760 cases, 993 cancer cases were seen in females (56.4%) and 767 were in males (43.5%). M: F ratio being 0.77:1. This is similar to a study done Aakansha Shukla *et al.* where there is increased preponderance in females for various cancers [14].

In our study in females the highest number of cancers was cervical cancers followed by breast cancers which are similar to the study done by Karmakar *et al.* where cervix had the majority of cancers in women [17] and Prasanth mathur *et al.* [18] where most common cancer in females was cervix followed by breast cancers.

The most common cancers reported in our study were of Head and neck cancers (including oral cavity) with a total of 491 cases (27.89%), female genital system cancers with 377 cases (21.4%), followed by GIT cancers with 231 cases (13.1%), followed by breast with 19 cases (11%). These results were similar to that of study done by Deshpande jayant *et al.* [19] and Aakansha Shukla *et al.* [4].

The next largest group was cancers of female genital tract with 377 cases. Out of 377 cases, majority of them ie 279 were cervical cancer cases (74%), 74 ovarian cancers (20%), 17 endometrial (4%) cancers, and 7 vulval cancers (2%).

In our study majority of the oral cavity cancers were squamous cell carcinomas similar to the study done by Pablo h Montero *et al.* [20] and most of them occurred in >60 years age group contrast to the study done by swati sharma *et al.* [21] where large no. of oral cancers were in the age group of >70 years.

In GIT out of 231 cancers reported, the largest number of cancers were from colorectal region with 92 cases (39.8%) which is similar to the study done by sunitha bamanikar *et al.* [22] and Bhagyalakshmi atla *et al.* [23] which is followed by stomach cancers with 32.4%, small intestine cancers (13.8%), anal canal cancers (8.6%), esophageal cancers (5.2%). Male predominance is seen in all the GI cancers in our study which is similar to the study done by Munesh k sharma *et al.* [24] on epidemiological trends in GI cancers.

## SUMMARY

The most common cancers reported in our study were of oral cavity followed by cancers of female genital tract. In the current study there is an increased predilection for cancers in females corresponding to high incidence of cervical cancers and breast cancers.

## CONCLUSION

Cancer cases are significantly increasing in incidence every year in developing countries like India. The present study is done to assess the cancer burden at the level of tertiary cancer center like King George hospital, Andhra medical college. By identifying the high risk groups who are prone to cancers early detection and treatment could significantly reduce the morbidity and mortality of the patient and improves the outcome.

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