

Cancer pattern among newly registered patients in a cancer hospital of South Gujarat

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ABSTRACT

Background: Cancer is a chronic disease, its prevalence is increasing worldwide due to various advances exist for the diagnosis and treatment. Cancer occurs as a result of unusual growth of cells and invasion of nearby tissue and organs. At present, cancer is the second leading cause of death. Cancer distribution has a wide variation in different parts of the world. **Objectives:** To observe the pattern of different types of Cancer, Age and Gender wise distribution of common cancer in newly registered cancer patients at Cancer Treating Institute. **Materials and Methods:** This cross-sectional study conducted in newly registered cancer patients at D.B. Tejani Cancer Institute, Surat. Total 690 patients purposively selected from December 2015 to January 2016. **Results:** The most common sites of cancer in decreasing order were oral cavity (19%), female genital tract (15.1%), breast cancer (14.5%), gastrointestinal tract (11.3%), lympho-hematopoietic system (9.9%), respiratory tract (5.6%), and others. In less than 14 years, lymphatic leukemia was found to be the most common cancer in boys and ovarian cancer (25%) among girls. **Conclusion:** Tobacco-related cancer was more common among more than 15-year-old males, while breast cancer was the most common type of cancer in females.


KEY WORDS: Cancer Pattern; Gender; South Gujarat

INTRODUCTION

In the 21st century, increasing facilities for better lifestyle and better treatment have improved the health scenario of most of the countries of world; it also increases the life expectancy of the population by decreasing deaths due to acute diseases mainly communicable diseases. However, adaptation of the 21st centuries' lifestyle and behavior such as increased tobacco consumption, high fat and low fiber diets, and reduced physical activity were commonest factors associated

with the increasing burden of cancer.^[1] Cancer incidence is increasing in developing countries (Global Health Council, 2010) and the increase is attributable to changes in risk factors including lack of physical activity, unhealthy diet, obesity, contaminants, ultraviolet or ionizing radiation, occupational or environmental exposure, aging, ethnicity or race, heredity, and infectious diseases.^[2] From the list of the non-communicable diseases, cancer is more important from the public point of view. Better diagnostic facility, increasing public awareness, and early health seeking to hospitals has been increasing the cancer detection at early stage which leads to higher survival chances among cancer patients.

The term cancer refers to a group of diseases which share similar characteristics. It is a general term used to refer to a condition where the body's cells begin to grow and reproduce in an uncontrollable way. These cells then invade and destroy healthy tissue, including organs. Cancer sometimes begins in

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one part of the body before spreading to other parts. Cancer can affect all living cells in the body, at all ages and in both genders. The causation is multifactorial and the disease process differs at different sites. Tobacco is the single-most important identified risk factor for cancer. A host of other environmental exposures, certain infections, as well as genetic predisposition play an important role in carcinogenesis. Diagnostic workup, treatment methods, and outcome of treatment are not uniform for all cancers. Advanced technology is required in many situations and on-going research initiatives might lead to better understanding of the disease and its control.

According to GLOBOCAN 2012, an estimated 14.1 million new cancer cases and 8.2 million cancer-related deaths occurred in 2012, compared with 12.7 million and 7.6 million, respectively, in 2008.^[3] Worldwide, the most commonly diagnosed cancers were those of the lung (13.0% of the total), breast (11.9%), colorectal (9.7%), prostate (7.9%), and stomach (6.8%); together, cancers of these five sites constitute half of the overall global cancer burden. Among men, the five most common sites of cancer diagnosed in 2012 were lung (16.7%), prostate (15%), colorectal (10%), stomach (8.5%), and liver (7.5%). However, among women, the five most common sites diagnosed were breast (25.2%), colorectal (9.2%), lung (8.7%), cervix (7.9%), and stomach (4.8%).^[4] The most common causes of cancer death were cancers of the lung (1.6 million, 19.4% of the total), liver (0.8 million, 9.1%), and stomach (0.7 million, 8.8%).^[4]

Cancer has arisen as a major public health concern in India. About 1.25 million new cases are diagnosed every year and around 2.8 million cases of cancers are prevalent at any given point of time.^[5] It also claims lives of about 6.8 lakh patients per year. Every day, 2500 persons die due to tobacco-related diseases. The top five cancers in men and women account for 42.7% of all cancers; these cancers can be prevented, screened for and/or detected early, and treated at early stages.^[6] Even children and adolescents were not spare from cancer disease. The most common types of cancer among pediatric patients were acute lymphocytic leukemia (37%) followed by acute myeloid leukemia (13%), non-Hodgkin's lymphoma (8%), Ewing's sarcoma (8%), osteosarcoma (7%), Hodgkin's lymphoma (6%), and other cancers such as Wilm's tumor, medulloblastoma, retinoblastoma, sarcomas, and germ cell tumor (26%). The diet was non-vegetarian in 93% and 7% vegetarian. At diagnosis, 52% had weight for the age between 3rd and 97th centile, 44% patients were undernourished, and 4% were obese.^[7]

In 1982, the Indian Council of Medical Research has launched a registry program for cancer in the name of National Cancer Registration Programme (NCRP) to provide true information on cancer prevalence and incidence. The coverage of cancer registration by the NCRP was <10% of Indian populations. These registries generate annual reports which indicate the annual incidence of particular cancer in population which help in planning and evaluation of cancer control. From these

registries, trend is indicating to put more emphasis on cancer prevention. The operational wing at the NCDIR-NCRP, headquartered in Bengaluru, collects data from all 29 PBCRs and 27 HBCR, analyzes the data, and monitors them regularly.

In Gujarat, Population-based study conducted by GCRI (Gujarat Cancer Research Institute) in urban and rural areas of Ahmedabad district, Patan district. In Patan district, age-adjusted incidence rate (AAR) among males was 61.84 and 28.63 in females per 100,000 populations, while the age-specific incidence rates range between 2.4 (10–14 years' age group) and 277.1 (70–74 years' age group) per 100,000 populations among males and 1.56 (0–4 years' age group) and 116.08 (55–59 years' age group) per 100,000 populations among females. Comparing crude rate (CR), AAR, and truncated incidence rates per 100,000 in different population-based cancer registries of Gujarat state.^[8]

Surat is a fast developing city with increase in industrialization, urbanization, migration of population, overcrowding, and changes in behavioral pattern of people. Day by day, the population density is increasing in Surat city due to increasing migration from different parts of the country. Although Surat city is developing very fast, it lacks in medical services for early detection and management of cancer. No studies conducted in Surat city that provide the details regarding the most common cancer in population of different age and gender. In South Gujarat, there was no data available regarding the burden of different types of cancer, sociodemographic and treatment profile of cancer, and risk factor responsible for different types of cancer. Shri Devarajbhai Bavabhai Tejani Cancer Institute (DBTCI), managed by D. B. Tejani Trust, is located in the campus of New Civil Hospital, Surat. It is a diagnostic and treatment center, which provides free-of-cost services to all types of cancer. Based on the information, a study was plan at DBTCI to observe the pattern of the cancer among newly registered patients at the institute.

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Objectives

1. To observe the pattern of different cancers in newly registered patients at a cancer-treating institute.
2. To observe the age- and gender-wise common cancers.

MATERIALS AND METHODS

It was a cross-sectional study conducted at Shri DBTCI, New Civil Hospital, Surat. It delivers diagnostic and treatment facility free of cost for almost all types of cancers. Around 15–20 new cancer patients are registered daily at the DBTCI for undergoing treatment for different types of cancer.

A purposive selection of a total of 690 cancer patients newly registered at the outpatient department of Shri DBTCI, Surat, from December 2015 to May 2016 except critically ill patients and who were not giving consent was made for enrolling patients into the study. A pre-designed semi-structured questionnaire was used for data collection. After completing data collection, data were entered into MS Excel data file. Data analysis was done using software IBM SPSS Statistics version 20 [(Statistical Package for the Social Sciences) IBM company, Armonk city, New York State, United States of America].

RESULTS

In the present study, 690 patients were included, of which 50.6% patients were females and 49.4% patients were males, with a male-to-female ratio of 0.98:1 showing female predominance. The most common cancer was oral cavity cancer (19%). In the oral cavity, tongue (9%) and floor of mouth (6.1%) were the most commonly affected sites. Oral cavity cancer followed by Female genital tract (15.1%) [8.3% uterine cervix and 4.8% ovary], Breast (14.5%), Gastrointestinal tract (11.3%) [5.5% colon-rectum and 2.8% stomach], Lympho-hematopoietic system (9.9%) [4.2% leukemia, 3.4% lymphoma, 1.2% multiple myeloma, and 1% others], Respiratory tract (5.6%), Bones and articular cartilage (3.5%), Abdominal organs (3.6%), Mediastinum (0.7%), Male genital tract (2.9%) [1.3% prostate, 0.9% penis, 0.7% testis], Urinary tract (1.1%), and other remaining cancer types [Table 1].

The present study had found that children and adolescents were also not spare from the cancer. Lymphatic leukemia was the most common cancer among <15-year-old boys (38.5%), whereas ovarian cancer (25%) was the most common among

girls. Tobacco-related cancer such as tongue cancer and floor of the mouth cancer were the most common cancer types among 15–34-year-old and 35–64-year-old male patients, while lung cancer was the most common in individuals aged more than 65 years. Among female patients, breast cancer was most common in all age groups except <15-year-old girls [Table 2].

DISCUSSION

In the present study, a total of 690 patients who were newly registered to an institute were included. The most common cancer sites in decreasing order were oral cavity (19%), female genital tract (15.1%), breast cancer (14.5%), GIT (11.3%), lympho-hematopoietic system (9.9%), respiratory tract (5.6%), and others. In less than 14 years, lymphatic leukemia was most common in boys and ovarian cancer (25%) was most common among girls. Tobacco-related cancer was more common among more than 15-year-old males while breast cancer was the most common cancer in females.

Age- and gender-wise common cancer types in the current study were compared with that of 2012–2014 Hospital-Based Cancer Registry (HBCR)^[9] of Mumbai, Bengaluru, Chennai, Dibrugarh, New Delhi, and Chandigarh. In the present study, among 0–14 years' age groups, lymphatic leukemia in boys and ovarian cancer in girls were the most common, while in all other HBCR data, leukemia was most common in both boys and girls [Table 3].^[9] In the present study, tongue cancer in males and breast cancer in females were most common in 15–34 years' age group; however, breast cancer was most common among females in all other HBCRs except Bengaluru where cervical cancer was most common, while among males, different HBCRs had different common cancers [Table 3].^[9] In the present study, among 35–64-year-old patients, mouth cancer was common in male patients and breast cancer in female patients. However, except Bengaluru HBCR, breast cancer was also most common in females in other studies, while in male patients, mouth, esophageal, and lung cancers were common [Table 3].^[9] Among patients those aged 65 and above, the most common cancer was lung cancer in male and breast cancer in female patients of this study; though in other studies, lung and hypo-pharynx

Table 1: ICD 10-wise classification of cancer patients in the present study

ICD 10 Code	Site	n (%)	System	
C00	Lip	6 (0.9)	Oral cavity cancer (19%)	
C01-C02	Tongue	62 (9.0)		
C03	Gum	9 (1.3)		
C04	Floor of mouth	42 (6.1)		
C05	Palate	7 (1.0)		
C06	Other and unspecified parts of mouth	5 (0.7)		
C07	Parotid gland	5 (0.7)		Salivary gland (1.4%)
C08	Other and unspecified major salivary glands	5 (0.7)		

(Contd...)

Table 1: (Continued)

ICD 10 Code	Site	n (%)	System
C09	Tonsil	14 (2.0)	Pharynx (2%)
C10	Oropharynx	2 (0.3)	
C11 and C13	Nasopharynx + hypopharynx	9 (1.3)	Gastrointestinal tract (11.5%)
C15	Esophagus	15 (2.2)	
C16	Stomach	19 (2.8)	
C17	Small intestine	5 (0.7)	
C18	Colon	18 (2.6)	
C19/C20	Rectum	20 (2.9)	
C21	Anus and anal canal	2 (0.3)	
C22	Liver and intrahepatic bile duct	8 (1.2)	Abdominal organs (3.6%)
C23/C24	Gallbladder and biliary track	10 (1.4)	
C25	Pancreas	7 (1.0)	
C30	Nasal cavity and middle ear	2 (0.3)	Respiratory tract (5.6%)
C32	Larynx	14 (2.0)	
C34	Bronchus and lung	23 (3.3)	
C38	Heart, mediastinum and pleura	5 (0.7)	Bone and articular cartilage
C40-C41	Bone and articular cartilage	24 (3.5)	
C43	Skin	1 (0.1)	Malignant neoplasms of mesothelial and soft tissue (mesothelioma, Kaposi sarcoma, peripheral nerves, retro-peritoneum and peritoneum, connective and soft tissue)
C45-C49	Malignant neoplasms of mesothelial and soft tissue (mesothelioma, Kaposi sarcoma, peripheral nerves, retro-peritoneum and peritoneum, connective and soft tissue)	10 (1.4)	
C50	Breast	100 (14.5)	Female genital tract (15.1%)
C51	Vulva	1 (0.1)	
C52	Vagina	2 (0.3)	
C53	Cervix uteri	57 (8.3)	
C54	Corpus uteri	11 (1.6)	
C56	Ovary	33 (4.8)	Male genital tract (2.9%)
C60	Penis	6 (0.9)	
C61	Prostate	9 (1.3)	
C62	Testis	5 (0.7)	Urinary tract (1.1%)
C64-C65	Kidney	3 (0.4)	
C66	Ureter	1 (0.1)	
C67	Bladder	4 (0.6)	
C69	Eye and adnexa	3 (0.4)	CNS: Meninges, brain, spinal cord, cranial nerve and other
C70-C72	CNS: Meninges, brain, spinal cord, cranial nerve and other	5 (0.7)	
C73	Thyroid gland	7 (1.0)	Malignant neoplasms of ill-defined, secondary and unspecified sites (ill-defined, LN, respiratory and digestive, other sites)
C76-C80	Malignant neoplasms of ill-defined, secondary and unspecified sites (ill-defined, LN, respiratory and digestive, other sites)	26 (3.8)	
C81	Hodgkin's lymphoma	12 (1.7)	Lympho-hematopoietic system (9.9%)
C85	Other and unspecified types of non-Hodgkin's lymphoma	12 (1.7)	
C88	Malignant immune-proliferative diseases	2 (0.3)	Multiple myeloma and malignant plasma cell neoplasms
C90	Multiple myeloma and malignant plasma cell neoplasms	8 (1.2)	
C91	Lymphoid leukemia	12 (1.7)	Myeloid leukemia
C92	Myeloid leukemia	15 (2.2)	
C93-C95	Monocyte and other leukemia	2 (0.3)	Other and unspecified malignant neoplasms of lymphoid, hematopoietic, and related tissues
C96	Other and unspecified malignant neoplasms of lymphoid, hematopoietic, and related tissues	5 (0.7)	

Table 2: Age- and gender-wise distribution of common cancer in the present study

Age group	Gender	1 st most common (%)	2 nd most common (%)	3 rd most common (%)
0–14 years	Boys (n=13)	LL (38.5)	HL (15.4)	NHL (15.4)
	Girls (n=8)	Ovary (25)	LL (12.5)	Kidney (12.5)
15–34 years	Male (n=45)	Tongue (20)	Floor of mouth (17.8)	HL (11.1)
	Female (n=35)	Breast (23)	Ovary (8.6)	Corpus uterus (8.6)
35–64 years	Male (n=230)	Floor of mouth (20.4)	Tongue (17)	Colon-rectum (7.8)
	Female (n=248)	Breast (32.7)	Cervix (18.5)	Ovary (9.7)
65+ years	Male (n=53)	Lung (17)	Prostate (9.4)	Tonsil (9.4)
	Female (n=58)	Breast (19)	Cervix (15.5)	Ovary (8.6)

LL: Lymphoid leukemia, HL: Hodgkin's lymphoma, NHL: Non-Hodgkin's lymphoma

Table 3: Age- and gender-wise comparison of most common cancer with other studies^[9]

Age group (years)	Gender	Present study 2016	Mumbai 2012–2014	Bengaluru 2012–2014	Chennai 2012–2014	Dibrugarh 2012–2014	New Delhi 2012–2014	Chandigarh 2012–2014
0–14	Boys	LL	Leukemia	Leukemia	Leukemia	Leukemia	Leukemia	Leukemia
	Girls	Ovary	Leukemia	Leukemia	Leukemia	Leukemia	Leukemia	Leukemia
15–34	Male	Tongue	ML	Brain	ML	Testis	Bone	Brain
	Female	Breast	Breast	Cervix	Breast	Breast	Breast	Breast
35–64	Male	Mouth	Mouth	Esophagus	Mouth	Esophagus	Mouth	Lung
	Female	Breast	Breast	Cervix	Breast	Breast	Breast	Breast
65+	Male	Lung	Lung	Hypopharynx	Lung	Hypopharynx	Lung	Lung
	Female	Breast	Breast	Cervix	Cervix	Esophagus	Breast	Cervix

LL: Lymphoid leukemia, ML: Myeloid leukemia

cancers were the most common in males and breast, cervical, and esophageal cancers in female patients [Table 3].^[9]

A hospital-based study was conducted in Jabalpur regarding cancer morbidity and mortality profile. The study results showed that the most common cancer in males was oral cavity cancer in all age groups except less than 30 years old where cancer of reticulo-endothelial system was more common. Whereas in female patients, cervical cancer was more common in all age groups except those less than 16 years old in whom cancer of the eye was commonest.^[10]

Limitation

The study limitations were a small number of patients were interviewed due to time limit and since this study was conducted as a part of the post-graduation thesis where limited time persist for data collection.

Recommendation

In South Gujarat, a proper cancer registry is required that collects the data and observes the pattern and magnitude of cancer. A population-based study is needed for finding further pattern of cancer in rural and urban areas.

CONCLUSION

Tobacco-related cancer was more common among more than 15-year-old male patients, while among female patients, breast cancer was the most common cancer in all age groups except those under 15 years in whom ovarian cancer was more common.

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