International Journal of Community Medicine and Public Health
Farook A et al. Int J Community Med Public Health. 2021 Sep;8(9):4319-4324
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040
DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20213531

Original Research Article

A retrospective analysis of cancers in a rural tertiary care centre

A. Farook[1], Balaji Arumugam[2]*

[1]Department of General Surgery, [2]Department of Community Medicine, Tagore Medical college and Hospital, Rathinamangalam, Chennai, India

Received: 25 June 2021
Accepted: 03 August 2021

***Correspondence:**
Dr. Balaji Arumugam,
E-mail: dr.a.balaji@gmail.com

ABSTRACT

Background: In the last couple of decades, cancer incidence has been raising heavily, probably due to our changing lifestyle, habits, and increased life expectancy. The situation is so alarming that every fourth person is having a lifetime risk of cancer.
Methods: The study was conducted as a retrospective study among the various cancer patients admitted in our tertiary care centre for a period of 10 years from 2011 to 2020. The data and the case sheets from the hospital records were obtained from the MRD department. The case sheets were reviewed by the investigators on the variables viz age, gender, diagnosis, cancer site, investigations and treatment aspects. The data were entered in the MS excel sheet and analyzed using Statistical package for social sciences (SPSS) software version 21. The data were expressed in terms of frequencies and percentages.
Results: Total cases reported were 121 of which in the year 2014 and 2015, the cancer cases reported were 32% and 26% respectively. Then again there was a peak in 2018 and 2019 with 8% and 31% with one case each in the year 2017 and 2020. High prevalence is seen with Breast cancer, which showed 60% followed by carcinoma stomach which is 18% and carcinoma rectum which is 9%. The cancers showed low prevalence, which is 1% include carcinoma prostate, carcinoma larynx, gastro intestinal stromal tumor and retro peritoneal lipo sarcoma.
Conclusions: Our study revealed that the cancer cases are high and it showed increasing trend which suggests that the population based cancer registries to be made at all levels of health care to identify the time trends so that prevention measures can be implemented at the community level.

Keywords: Breast cancer, Cancer stomach, Retrospective study, GIST, RPLS

INTRODUCTION

Cancer ranks as a leading cause of death and an important barrier to increasing life expectancy in every country of the world.[1] According to estimates from the World Health Organization (WHO) in 2019, cancer is the first or second leading cause of death before the age of 70 years in 112 of 183 countries and ranks third or fourth in a further 23 countries.[2] Overall, the burden of cancer incidence and mortality is rapidly growing worldwide; this reflects both aging and growth of the population as well as changes in the prevalence and distribution of the main risk factors for cancer, several of which are associated with socioeconomic development.[3,4] The recent estimates by GLOBOCAN suggests that worldwide, an estimated 19.3 million new cancer cases and almost 10.0 million cancer deaths occurred in 2020. The incidence of cancer among males was 10.1 and 9.2 million whereas the deaths were 5.5 and 4.4 million. Female breast cancer has surpassed lung cancer as the most commonly diagnosed cancer, with an estimated 2.3 million new cases (11.7%), followed by lung (11.4%), colorectal (10.0 %), prostate (7.3%), and stomach (5.6%) cancers. Lung cancer remained the leading cause of cancer death, with an estimated 1.8 million deaths

(18%), followed by colorectal (9.4%), liver (8.3%), stomach (7.7%), and female breast (6.9%) cancers.5 Between 30 and 50% of cancers can currently be prevented by avoiding risk factors and implementing existing evidence-based prevention strategies. The cancer burden can also be reduced through early detection of cancer and appropriate treatment and care of patients who develop cancer. Many cancers have a high chance of cure if diagnosed early and treated appropriately. Many retrospective studies have been conducted throughout the world on specific cancers, social factors, demographic factors and clinic pathological factors on breast cancers, cervical cancer, gastric cancers etc. The studies on overall cancers, demographic attributes in tertiary care institutes were not done commonly. Our study was done as a retrospective analysis of various cancers for a decade.

METHODS

Study design and period

The study was conducted as a retrospective study among the various cancer patients admitted in our tertiary care centre for a period of 10 years from 2011 to 2020. The data and the case sheets from the hospital records were obtained from the MRD department.

Study population

All the inpatients who presented with all the stages of cancer from any part of the body underwent surgical procedures in the surgery department during this period of 10 years were included in the study. The case sheets were reviewedby the investigators on the variables viz age, gender, diagnosis, cancer site, investigations and treatment aspects.

Data collection and entry

The data were entered in the MS excel sheet and analyzed using SPSS software version 21. The data were expressed in terms of frequencies and percentages.

Outcome measures

The outcome measures were types of cancers and its frequencies, male and female distribution, age group distributions of various cancers, surgical procedures done for various cancers were assessed.

Table 1: Year wise distribution of cancer types in the hospital.

Cancer types	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
CA breast	0	0	0	14	22	0	0	5	32	0	73
CA stomach	0	0	0	9	9	0	0	1	3	0	22
CA rectum	0	0	0	9	1	0	0	1	0	0	11
CA prostate	0	0	0	0	0	0	1	0	0	0	1
CA penis	0	0	0	5	0	0	0	1	0	0	6
CA thyroid	0	0	0	2	0	0	0	1	0	0	3
CA skin	0	0	0	0	0	0	0	0	2	0	2
CA Larynx	0	0	0	0	0	0	0	0	0	1	1
GIST	0	0	0	0	0	0	0	1	0	0	1
RPLS	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	39	32	0	1	10	38	1	121

RESULTS

Proportion and distribution of cancers in the last 10 years

In the beginning of decade, the first three years there were no cases of cancer reported in the hospital. In the year 2014 and 2015, the cancer cases reported were 32% and 26% respectively. Then again there was a peak in 2018 and 2019 with 8% and 31% with one case each in the year 2017 and 2020. In the year 2014, the reported cases of cancer were Ca breast 14, Ca stomach 9, Ca rectum 9, Ca penis 5, Ca thyroid 2 with the total of 39 cases reported. Similarly, in the year 2015, Ca Breast 22, Ca Stomach 9 and 1 case of Ca rectum. (Table 1)

Types of cancers

A total of 121 Cancer patients were treated in a span of 10 years from 2011 to 2020 in surgery department in Tagore Medical College and Hospital, Rathinamangalam. In this 121 patients, 73 (60%) were having breast cancer i.e., more than two third of patients encountered were presented with

breast cancer. The other cancers which managed to touch the double digit were carcinoma stomach which is 22 (18%) and carcinoma rectum which is 11 (9%), followed by cases of carcinoma of penis 6 (5%), carcinoma of thyroid 3 (2.5%) and skin cancer (1.7%). The others were carcinoma of prostate, carcinoma of larynx, gastrointestinal stromal tumors and retro peritoneal lipo sarcoma which were one each respectively. High prevalence is seen with Breast cancer, which showed 60% followed by carcinoma stomach which is 18% and carcinoma rectum which is 9%. The cancers showed low prevalence, which is 1% include carcinoma prostate, carcinoma larynx, gastro intestinal stromal tumor and retro peritoneal lipo sarcoma. (Table 1)

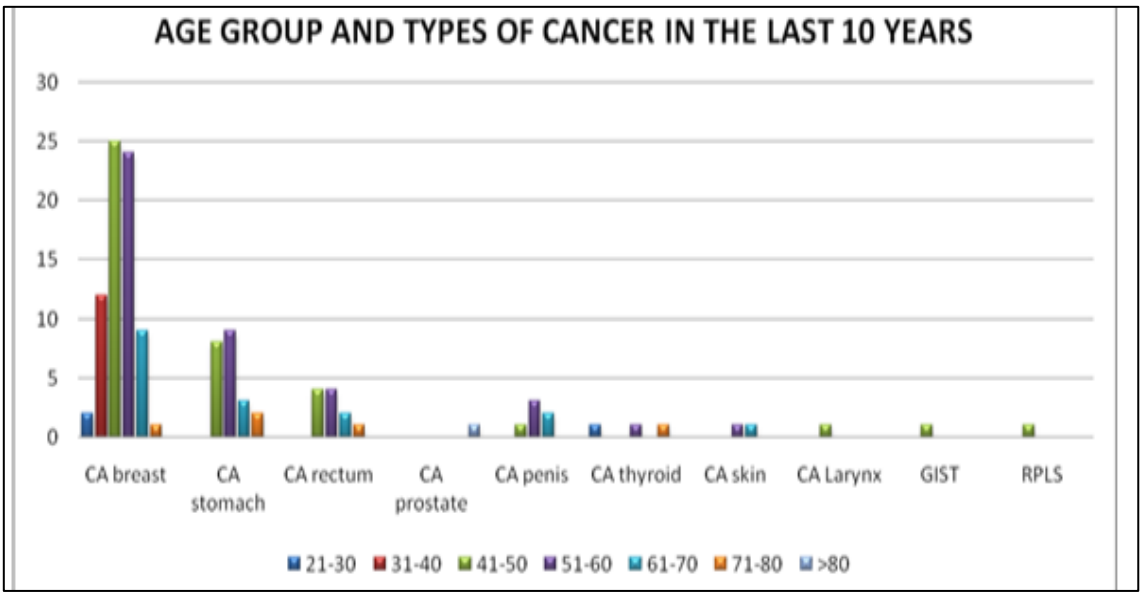

Figure 1: Age group and types of cancer in the last 10 years.

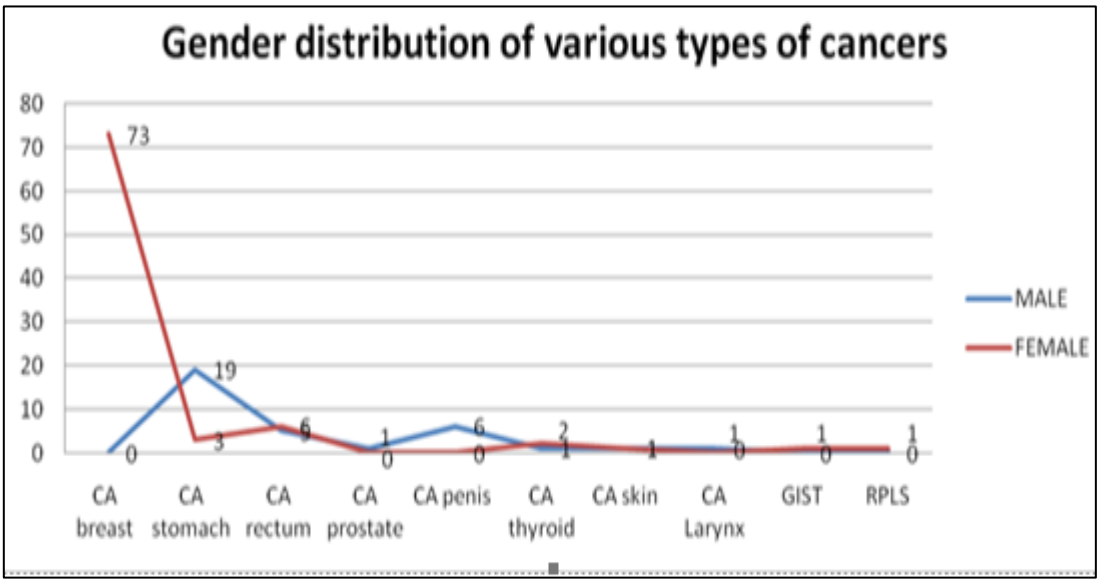

Figure 2: Gender distribution of various types of cancers.

Cancer breast

The frequency distribution of cancer breast among the different age groups showed that the peak prevalence among the 41 to 50 years age groups and then followed by 51 to 60 years age group. The frequency was 25 out of 73 (34%) and 24 out of 73 (32.8%) cases of breast cancer among 41 to 50 years and 51 to 60 years of age group respectively. The proportion among the 31 to 40 years and 61 to 70 years were 16.4% and 12.3% respectively. (Figure 1)

Cancer stomach

The second common cancer reported in this study was Cancer stomach with the prevalence of 22 (18%) of the total cancers. The age group distribution was similar to the Ca breast with the peak 17 (77%) in the age group of 41 to 60 years of age. The remaining 5 (22.7%) cases of Ca Stomach diagnosed in the age group of above 61 years.

Cancer rectum

Similar age group pattern was exactly observed in the rectal cancer also, with the majority 8 (72%) of cases diagnosed between 41 to 60 years of age group.

Cancer penis

There were totally 6 cases of Ca Penis of which 1, 3 and 2 cases diagnosed in the 41 to 50 years, 51 to 60 years followed by 61 to 70 years age group respectively.

Figure 3: 40 years female presented with retro peritoneal liposarcoma of weighing 7 kg total excision.

Other cancers and age group distribution (Figure 1)

Overall, the cancer were more common among 41 years and above age group with the peak of cancers between 41 to 60 years and then there was decline in the cancer incidence in 61 years and above age group. Only two cancers (14 + 1) were presented and diagnosed in the less than 40 years age group viz cancer breast and cancer thyroid of which 2 cases of Ca breast and 1 case of Ca thyroid in the 21 to 30 years age group. One case of carcinoma prostate was diagnosed in the above 80 years age category. Three rare cancers like Ca larynx, RPLS and GIST were diagnosed in the 41 to 60 years age group.

Gender distribution of cancers

Overall, the gender specific cancers like carcinoma breast (60%), carcinoma penis (5%) and carcinoma prostate (0.8%) constitute 79 (65.8%) cancers. Out of 22 carcinoma stomach patients 19 were males and remaining 3 were females which suggests that the prevalence is more among males than females. Carcinoma rectum and carcinoma skin showed equal prevalence among males and females. Rare cancers like RPLS and GIST were presented only among females in this study. Out of total 3 cases of Ca thyroid, one patient was a male and other two females (Figure 2).

DISCUSSION

Cancer is one of the most dreaded diseases of the 20th century and spreading further with continuance and increasing incidence in the 21st century. The situation is so alarming that every fourth person is having a lifetime risk of cancer. Is cancer curable? The short answer to this question is "Yes." In fact, all cancers are curable if they are caught early enough. Cancer cells continue to grow unless one of four things occur: The cancerous mass is removed surgically; using chemotherapy or another type of cancer-specific medication, such as hormonal therapy; using radiation therapy; or the cancer cells shrink and disappear on their own. Many studies have been published on cancer epidemiology, cancer critical analysis of survival rates, cancer time trends to predict and assess the treatment modalities of cancer. Recently, NCRP has published a report on Time Trends in Cancer Incidence Rates (NCRP 2009). This report depicts the changes in incidence rates of cancer from five urban registries and one rural registry of India. The Linear Regression method (IARC 1991) was used to assess the time trend and the projection of rates for the periods 2010-2020. The total cancer cases are likely to go up from 979,786 cases in the year 2010 to 1,148,757 cases in the year 2020. Among males and females, cancer of breast alone is expected to cross the figure of 100,000 by the year 2020.[6] In our ten year retrospective study had shown an increasing trend during the 2014, 2015 then again a peak in 2018 and 2019. The reported incidence was 32%, 26%, 8% and 31% in the years 2014, 2015, 2018 and 2019 respectively. In the year 2014, the reported cases of cancer were Ca breast 14, Ca Stomach 9, Ca Rectum 9, Ca Penis 5, Ca thyroid 2 with the total of 39 cases reported. Similarly in the year 2015, Ca Breast 22, Ca Stomach 9 and 1 case of Ca rectum. Many authors have used age, period, and cohort models to arrive at cancer burden in communities.[7,8] One of the simple approaches to project the cancer cases for future is by making use of the approach of linear regression. In this approach the trend of the incidence rates of certain site is first determined and then rates are estimated for the desired future periods using the linear regression equation. Multiplying rates so arrived with appropriate estimated population figures, the projected number of cases is estimated. The main risk factors for these cancers are tobacco and alcohol. Avoidance of tobacco and alcohol is the most important preventive action against mouth, throat and lung cancers. Cancer of the oral cavity can be detected early and every opportunity should be exploited to detect pre cancerous conditions or cancers of the oral cavity through interacting closely with those who have the habit of tobacco. Thyroid cancer has been shown to be an emerging cancer particularly in Chennai and Bangalore PBCR.[6] Our

hospital based study revealed overall, the cancer were more common among 41 years and above age group with the peak of cancers between 41 to 60 years and then there was decline in the cancer incidence in 61 years and above age group. Only two cancers (14 + 1) were presented and diagnosed in the less than 40 years age group viz Cancer breast and cancer thyroid of which 2 cases of Ca Breast and 1 case of Ca Thyroid in the 21 to 30 years age group. One case of Carcinoma Prostate was diagnosed in the above 80 years age category. Three rare cancers like Ca Larynx, RPLS and GIST were diagnosed in the 41 to 60 years age group. Cancer epidemiology literature study reported that Commonest cancers in India emerged from this review were breast and cervix in females and tobacco-related cancers in the males. Eleven of the 22 studies that addressed cancer trends have documented breast cancer incidence trend. Lung, esophagus, lip and oral cancers were three top cancers reported in men, in this review. Breast and cervical cancers, followed by tobacco related cancers generated the highest number of research papers, among all the cancers.[9]

Similarly, our study among 121 patients presented with, 73 (60%) were having breast cancer i.e., more than two third of patients encountered were presented with breast cancer. The other cancers which managed to touch the double digit were carcinoma stomach which is 22 (18%) and carcinoma rectum which is 11 (9%), followed by cases of carcinoma of penis 6 (5%), carcinoma of thyroid 3 (2.5%) and skin cancer (1.7%). The others were carcinoma of prostate, carcinoma of larynx, gastrointestinal stromal tumors and retro peritoneal lipo sarcoma which were one each respectively. Many studies have projected that, the cancers will increase much more and the projected number of patients with cancer in India is 1,392,179 for the year 2020, and the common 5 leading sites are breast, lung, mouth, cervix uteri, and tongue. The majority of the patients with cancer were diagnosed at the locally advanced stage for breast (57.0%), cervix uteri (60.0%), head and neck (66.6%), and stomach (50.8%) cancer, whereas in lung cancer, distant metastasis was predominant among males (44.0%) and females (47.6%).[10] Cancer cure: A critical analysis by Roy et al suggested that the six highly treatable cancers among others are – cancers of breast, skin (nonmelanomas), colon, prostate, testes, and cervix.[11] Most of the childhood malignancies (both solid and hematolymphoid) are curable. Breast cancer is the most common nonskin cancer among women, as one out of every eight women will be diagnosed in her lifetime. Skin cancers (basal cell carcinoma and squamous cell carcinoma) are the most common form of all human cancers, and if found early, skin cancer is nearly 100% treatable. Due to the tremendous improvements in modern medicine, the management of various cancers have come across big break through. For example avoiding immune destruction is now considered a hallmark of cancer, and the immunotherapy arena has exploded with the recent advances demonstrating an improvement in survival and a durability of response in patients with different cancer types, like in melanoma, which translates into an improved overall survival benefit.[12] To name those immunotherapeutic strategies that include the adoptive transfer of ex vivo activated T cells, immunomodulatory MABs, and cancer vaccines. Advances in molecular pathology will provide the means to identify the targets and will be used to subtype tumors and will provide predict response to therapy and provide prognostic information.[13] India State-level disease burden initiative cancer collaborators study published in Lancet 2018, on the burden of cancers and their variations across the states of India: the Global burden of disease study 1990–2016. Among the cancers, the age-standardised incidence rate of breast cancer increased significantly by 40.7% from 1990 to 2016, whereas it decreased for stomach (39·7%), lip and oral cavity (6·4%), cervical (39·7%), and oesophageal cancer (31·2%), and leukaemia (16·1%). They found substantial inter-state heterogeneity in the age-standardised incidence rate of the different types of cancers in 2016, with a 3.3 times to 11.6 times variation for the four most frequent cancers (lip and oral, breast, lung, and stomach).[14] Documents on cancer registries mention that hospital-based cancer registries cannot be used for policy decisions or planning for the same reason of selection bias due to poor access to the healthcare facilities.[15] Hence, primary population-based data of incidence are needed to represent the true nature and magnitude of the cancer burden.

CONCLUSION

Our ten years study conducted in a rural setting at a tertiary care institute revealed that the cancer are on the rise and we reported variety of cancer even with the rare type of cancers like RPLS, GIST and Ca Skin. The majority of the cancer occurred in the 41 years and above age group and breast cancer was the most common among all cancers reported in this study. Almost all cancer underwent major surgical treatments and for further management the cases were referred to the nearby cancer specialty centre at Chennai. Cancer specialty and chemo radio therapy services are available in the urban part of the areas mainly so in order to provide a comprehensive cancer treatment, even rural areas also should be equipped with the higher cancer treatment referral centers. Similarly, in addition to the hospital based cancer registries, wide population based registries to be made available and it should be routinely done in time to time to assess the cancer incidence and risk factors.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Bray F, Laversanne M, Weiderpass E, Soerjomataram I. The ever-increasing importance of cancer as a leading cause of premature death worldwide. Cancer. In press.

2. World Health Organization (WHO). Global Health Estimates 2020: Deaths by Cause, Age, Sex, by Country and by Region, 2000-2019. WHO; 2020. who.int/ data/gho/data/theme s/mortality-andgloba l-healt h-estimates/ghe-leadingcause s-of-death. Accessed 11th December, 2020.
3. Omran AR. The epidemiologic transition. A theory of the epidemiology of population change. Milbank Mem Fund Q. 1971;49:509-38.
4. Gersten O, Wilmoth JR. The cancer transition in Japan since 1951. Demogr Res. 2002;7:271-306.
5. Sung H. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. Ca Cancer J Clin. 2021;0:1-41.
6. Takiar R, Nadayil D, Nandakumar A. Projections of Number of Cancer Cases in India (2010-2020) by Cancer Groups. Asian Pacific J Cancer Prev. 2020;11:1045-9.
7. Verdecchia A, Angelis GD, Capocaccia R. Estimation and projections of cancer prevalence from cancer registry data: statistics in medicine. Stat Med. 2020;21:3511-26.
8. Olsen AH, Parkin DM, Sasieni P. Cancer mortality in the United Kingdom: Projections to the year 2025. Br J Cancer. 2008;99:1549-54.
9. Deepa KV, Venghateri JB, Khajanchi M, Gadgil A, Roy N. Cancer epidemiology literature from India: Does it reflect the reality? Journal of Public Health. 2020;42:e421-7.
10. Prashant Mathur.etal. Cancer Statistics. 2020. Report From National Cancer Registry Programme, India. Global Oncol. 2020;6:1063-75.
11. Roy P, Saikia B. Cancer and cure: A critical analysis. Indian J Cancer. 2016;53:441-2.
12. Couzin-Frankel J. Breakthrough of the year. Cancer immunotherapyScience. 2013;342:1432-3.
13. Bennett WP, Hussain SP, Vahakangas KH, Khan MA, Shields PG, Harris CC. Molecular epidemiology of human cancer risk: Gene-environment interactions and p53 mutation spectrum in human lung cancer. J Pathol. 1999;187:8-18.
14. India State-Level Disease Burden Initiative Cancer Collaborators. The burden of cancers and their variations across the states of India: the Global Burden of Disease Study 1990–2016. Lancet Oncol. 2018;12:1289-306.
15. CANCER Registries, Why, What and How? https://www.uicc.org/sites/main/files/atoms/files/UICC%20Cancer%20Registries-%20why%20what%20how.pdf. Accessed on 28th May, 2021.

Cite this article as: Farook A, Arumugam B. A retrospective analysis of cancers in a tertiary care centre. Int J Community Med Public Health 2021;8:4319-24.