

Study of Cancer Trends in Government T.D. Medical College Alappuzha during the Year 2016-2017 and Comparison with Trend a Decade Ago

Praveen Jacob Ninan¹, R. Sivaramakrishnan², Bindu SM³

¹Associate Professor of Radiotherapy, T.D. Medical College, Vandanam, Alappuzha, Kerala, India.

²Professor of Radiotherapy, Govt. T.D. Medical College, Vandanam, Alappuzha, Kerala, India.

³Assistant Professor in Radiotherapy, Govt. T.D. Medical College, Vandanam, Alappuzha, Kerala, India.

Corresponding Author: Bindu S M

ABSTRACT

Introduction: Cancer is a major public health issue in most of the countries, including India. The most important factor for cancer prevention and control is the accurate and valid information on cancer incidence, mortality, survival, and other socio-demographic factors. Lower socioeconomic status is known to be associated with an increased incidence of cancer and inferior survival. National Centre for Disease Information and Research which closely work with the Ministry of Health, Government of India and other Central/State Government or other agencies to provide or plan to provide baseline information and technically help in designing, monitoring and evaluating control programs and activities. Classifications of disease are essential. They define the universe of diseases that exist and classify them according to specified criteria. The ICD 10 coding was introduced by WHO in the year 1993 and India adopted the same in 2000.

Aims and Objectives

1. To study the trends of Cancer at Government T.D Medical College Alappuzha during the year 2016-17 and comparison with the pattern a decade ago during 2006-07.
2. To study the major cancer types with ICD-O coding, and socio-economic parameters of the patients registered in Radiotherapy department during the period January 2016 to December 2017 and January 2006 to December 2007.

Materials and Method: After getting ethical clearance all patients registered in Radiotherapy department during the period January 2016 to December 2017 and January 2006 to December

2007 with diagnosis of cancer were enrolled for the study. The Case Registry file of all such patients were retrieved from the department cancer registry and details entered in separate proforma. Age distribution, Gender distribution, community wise distribution and system wise distribution of cases were studied. The use of tobacco in any form will be noted. All data were analysed using Microsoft Excel spread sheet.

Result: A total of 2822 patients were registered in the department during the year 2016-2017. Of the total patients there were 1359 males and 1463 females. The numbers of patients registered during January 2006 to December 2007 were 1419 of which there were 687 male patients and 732 females.

The mean age of the male cancer cases in 2016-2017 was 58.32 as compared to 59.66 in 2006-2007 and for female cases in was found to be 54.11 and 55.17 respectively. In 2016-2017 the majority of male patients were in the age 55-59 years whereas in females it was 45-49years. The same pattern was seen in 2006-2007.

The system wise distribution of cancers were studied and it was found that in 2016-2017 the majority of cases were in respiratory system (26.3%) in males and Breast (45.7%) in females. The same trend was seen in 2006-2007 with case in respiratory system (21.5%) in males and Breast (35.1%) in females.

Of the 10 leading cancers in males in 2016-2017, Lung was the highest number of 295(21.7%) cases as compared to 2006-2007 it was 124 (18.1%). The Head and Neck cancer taken together was next in the order with 273 (20.1%) in 2016-2017 and 104 (15.1%) in 2006-2007. The number of stomach cancer was 108 (7.95%) and 45 (6.6%) respectively. In females Breast cancer was the leading number with 668

(45.7%) and 257 (35.1%) in 2016-2017 and 2006-2007 respectively. The number of Cancer cervix were 126 (8.6%) and 71 (9.7%) respectively. The Head and Neck cancer taken together was next in the order with 114 (7.8%) in 2016-2017 and 52 (7.1%) in 2006-2007.

The commonest cancer in 0-14 years age group was found to be Leukemia whereas in 15-34 years age group the commonest cancer was stomach in males and Breast in females. In the age group 35-64 years there were 823 males and 1056 females in 2016-2017 and the same were 19 males and 44 females in 2006-2007. The commonest cancer was lung 198 in 2016-2017 and 78 in 2006-2007. In females the number of breast cases outnumbered with 398 in 2016-2017 and 207 in 2006-2007. In the age group above 65 years head and cancers were high with 154 males in 2016-2017 but in 2006-2007 it was lung with 45 cases.

Cancer cases in various religious communities showed that in 2016-2017 among males there were 932 (68.6%) Hindus, 202 (14.9%) Muslims and 225 (16.5%) Christians and among females there were 1036 (70.8%) Hindus, 253 (17.3%) Muslims and 174 (11.9%) Christians. In 2006-2007 among males there were 474 (69%) Hindus, 84 (12.2%) Muslims and 129 (18.8%) Christians and among females there were 543 (74.2%) Hindus, 75 (10.2%) Muslims and 114 (15.6%) Christians.

Conclusion: The number of cancer cases registered at Government T.D Medical College Alappuzha during the year 2016-17 has almost doubled as compared to a decade back. The mean age for both male and female cancer cases have decreased in a span of 10 years. The number of cancer breast is on the high in females and is showing a trend towards earlier age at presentation. In males the leading number of cases even after a decade is cancer lung followed by head and neck cancers taken together. In females, cancer Uterine cervix continues to be in the second highest position. Taking into consideration the religious communities the number of Hindus were the highest in both males and females and the trend of cancer was almost the same even after a decade but we observed a significant increase in the percentage of Muslim females in 2016-2017 as compared to a decade ago whereas the percentage of Christian females were less after a decade.

Key Words: Cancer trends, cancer statistics, ICD-O coding, distribution of cancers

INTRODUCTION

Cancer is a major public health issue in most of the countries, including India. The most important factor for cancer prevention and control is the accurate and valid information on cancer incidence, mortality, survival, and other socio-demographic factors. Lower socioeconomic status is known to be associated with an increased incidence of cancer and inferior survival. Various hypotheses to explain survival differences between social groups have been proposed in the literature, including differences in tumor biology, patient comorbidity, stage of disease at diagnosis, access to therapy, and treatment practices.

National Centre for Disease Information and Research which closely work with the Ministry of Health, Government of India and other Central/State Government or other agencies to provide or plan to provide baseline information and technically help in designing, monitoring and evaluating control programs and activities. The main broad and overall objective of the centre is to sustain and develop a national research data-base on cancer, diabetes, CVD and stroke through recent advances in electronic information technology with a national collaborative network, so as to undertake aetiological, epidemiological, clinical and control research in these areas.

Classifications of disease are essential. They define the universe of diseases that exist and classify them according to specified criteria. The ICD 10 coding was introduced by WHO in the year 1993 and India adopted the same in 2000.

MATERIALS AND METHOD

After getting ethical clearance all patients registered in Radiotherapy department during the period January 2016 to December 2017 and January 2006 to December 2007 with diagnosis of cancer

will be enrolled for the study. The approximate sample size will be 1400 patients in 2006-07 and 2000 patients in 2016-17. The Case Registry file of all such patients will be retrieved from the department cancer registry and details will be entered in separate proforma. Age distribution, Gender distribution, community wise distribution and system wise distribution of cases will be studied. The use of tobacco in any form will be noted. All data will be analysed.

Inclusion Criteria

All patients registered in the department during the period January 2016 to December 2017 and January 2006 to December 2007.

Exclusion Criteria

Any patient with no definite evidence of malignancy.

RESULT

A total of 2822 patients were registered in the department during the year 2016-2017. Of the total patients there were 1359 males and 1463 females. The numbers of patients registered during January 2006 to December 2007 were 1419 of which there were 687 male patients and 732 females.

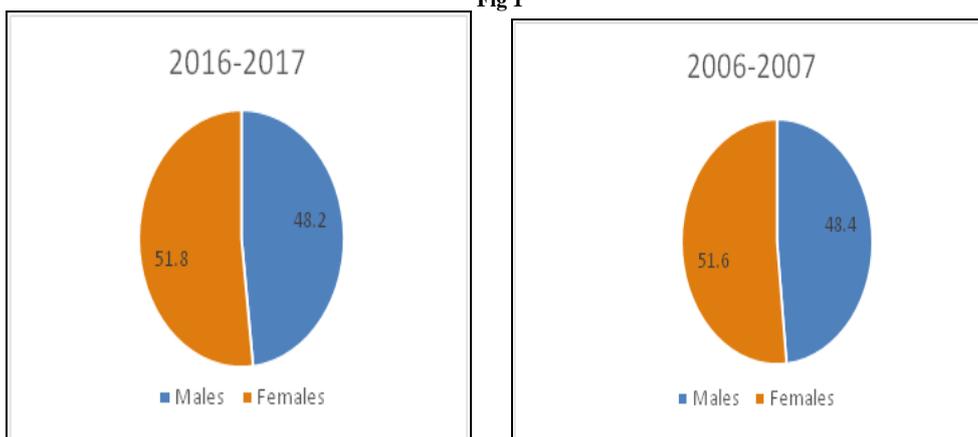
Table 1: Year wise number of cancer cases in males and females 2016-2017

Year	Males	%	Females	%
2016	716	52.7%	724	49.5%
2017	643	47.3%	739	50.5%
Total	1359	100	1463	100

Year wise number of cancer cases in males and females 2006-2007

Year	Males	%	Females	%
2006	331	48.2%	342	46.7%
2007	356	51.8%	390	53.3%
Total	687	100	732	100

Fig 1



Age distribution

The mean age of the male cancer cases in 2016-2017 was 58.32 as compared

to 59.66 in 2006-2007 and for female cases in was found to be 54.11 and 55.17 respectively.

Table 2

AGE	MALES				FEMALES			
	2016-2017	%	2006-2007	%	2016-2017	%	2006-2007	%
0-4	2	0.2%	2	0.3%	2	0.1%	1	0.1
5-9	3	0.2%	1	0.1%	2	0.1%	1	0.1
10-14	4	0.3%	1	0.1%	3	0.2%	1	0.1
15-19	15	1.1%	6	0.9%	13	0.9%	4	0.5
20-24	20	1.5%	2	0.3%	27	1.8%	6	0.8
25-29	12	0.9%	4	0.6%	30	2.1%	15	2.0
30-34	19	1.4%	7	1.0%	48	3.3%	19	2.6
35-39	44	3.2%	16	2.3%	110	7.5%	46	6.3
40-44	65	4.8%	28	4.1%	138	9.4%	58	8.0
45-49	129	9.5%	56	8.2%	235	16.1%	103	14.1
50-54	140	10.3%	79	11.5%	172	11.8%	96	13.1
55-59	242	17.8%	115	16.7%	204	13.9%	92	12.6
60-64	203	14.9%	112	16.3%	197	13.5%	83	11.4
65-69	190	14%	99	14.4%	138	9.4%	80	10.9
70-74	146	10.7%	86	12.5%	87	6.0%	61	8.3
≥75	125	9.2%	73	10.6%	57	3.9%	66	9.0
	1359	100%	687	100%	1463	100%	732	100%

Fig 2

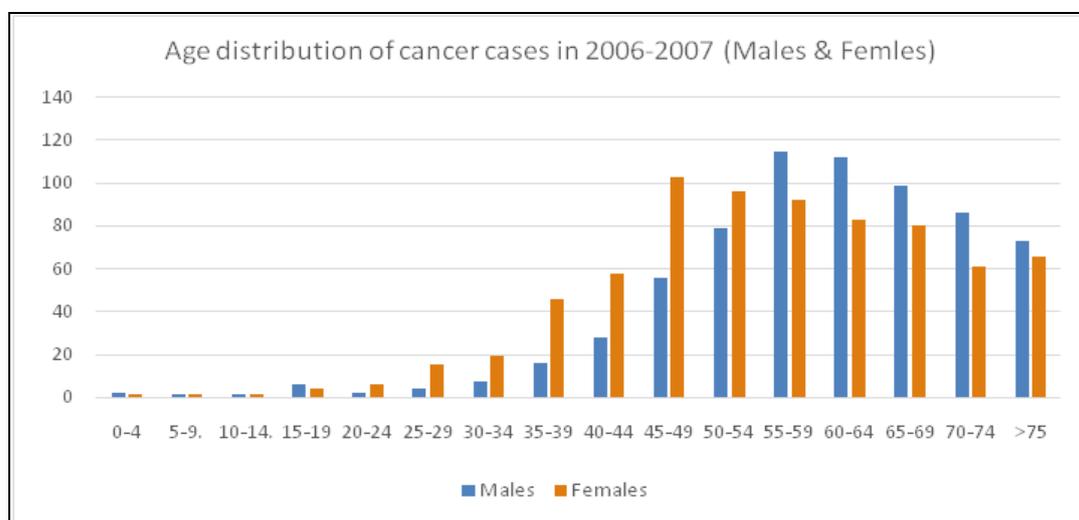
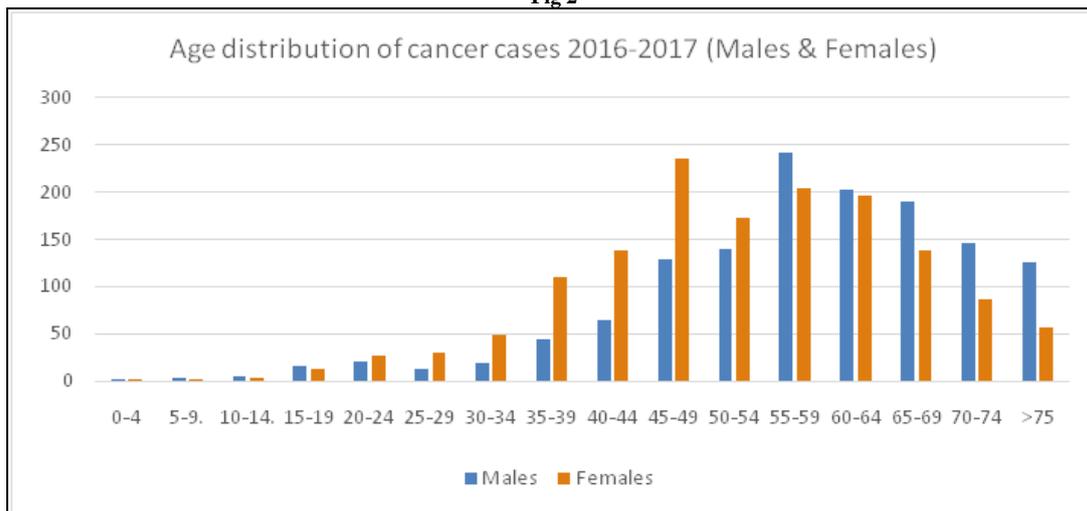


Table 3: System wise distribution of Cancer cases

Cancer site	Males				Females			
	2016-2017	%	2006-2007	%	2016-2017	%	2006-2007	%
Brain and Nervous System	16	1.1	9	1.3	12	0.8	7	1.0
Head & Neck cancers	273	20.2	104	15.1	114	7.8	52	7.1
Thyroid	14	1.1	10	1.5	36	2.5	23	3.1
Respiratory system	357	26.3	148	21.5	75	5.1	27	3.8
Breast	3	0.2	2	0.3	668	45.7	257	35.1
Esophagus and Stomach	177	13	69	10.1	35	2.4	18	2.5
Other digestive organs	128	9.4	59	8.6	70	4.8	37	5.1
Urinary tract	87	6.4	31	4.5	14	1.0	9	1.2
Reproductive system	71	5.2	28	4.1	280	19.1	150	20.5
Bone, connective tissue skin	80	5.9	31	4.5	46	3.1	25	3.4
Leukemia	30	2.2	26	3.8	29	2.0	18	2.3
Lymphoma, Hodgkin's	98	7.2	34	4.9	63	4.3	16	2.2
All others	25	1.8	136	19.8	21	1.4	93	12.7
Total	1359	100	687	100	1463	100	732	100

Table 3 shows the system wise distribution of cancer cases among males and females a decade apart. In Males 20.2% patients had head and neck cancers in 2016-2017 compared to 15.1% in 2006-2007. Among males 26.3% had cancers of respiratory system in 2016-2017 when

compared to 21.5% in 2006-2007. In females breast cancer alone shows high predominance in both the decades of 45.7% and 35.1%. There was significantly less % of other cancers in 2016-2017 when compared to 2006-2007.

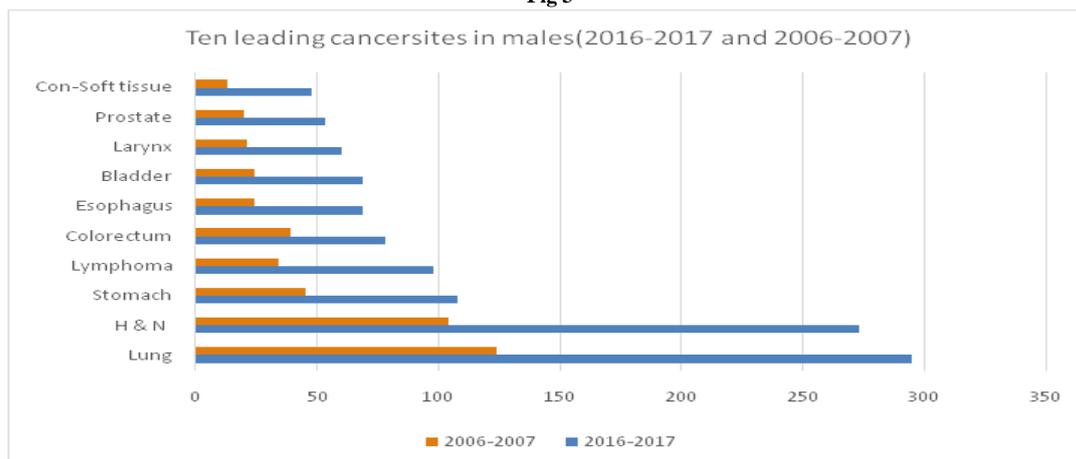
Table 4 Ten leading cancer types in males and females in 2016-2017

Males (2016-2017)			Females(2016-2017)		
Cancer Sites	Nos.	%	Cancer Sites	Nos.	%
Lung	295	21.7	Breast	668	45.7
Head and Neck	273	20.1	Cervix Uteri	126	8.6
Stomach	108	8.0	Head and Neck	114	7.8
Lymphoma	98	7.2	Ovary	101	6.9
Colorectum	78	5.7	Lung	71	4.9
Esophagus	69	5.1	Lymphoma	63	4.3
Urinary Bladder	69	5.1	Thyroid	36	2.5
Larynx	60	4.4	Colorectum	32	2.2
Prostate	53	3.9	Uterus	32	2.2
Connective, Subcutaneous and other soft tissue	48	3.5	Connective, Subcutaneous and other soft tissue	29	2.0

Ten leading cancer types in males and females in 2006-2007

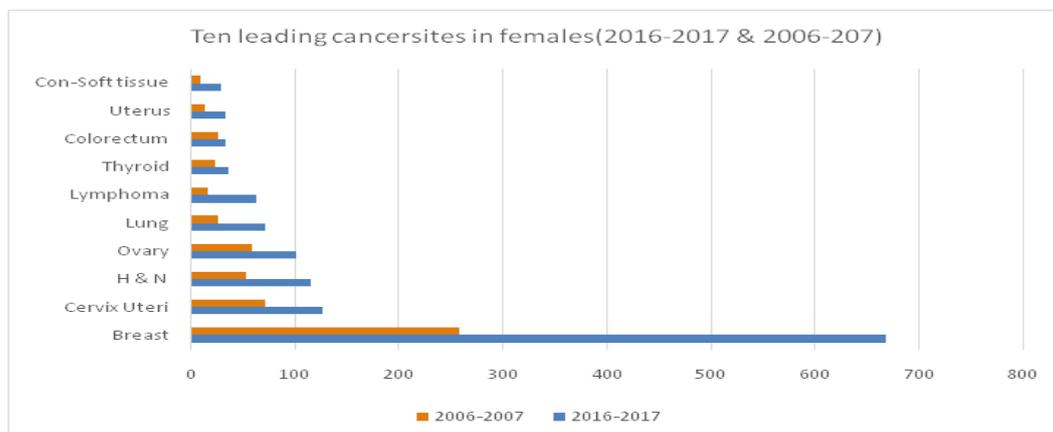
Males (2006-2007)			Females(2006-2007)		
Cancer Sites	Nos.	%	Cancer Sites	Nos.	%
Lung	124	18.1	Breast	257	35.1
Head and Neck	104	15.1	Cervix Uteri	71	9.7
Stomach	45	6.6	Ovary	58	7.9
Colorectum	39	5.7	Head and Neck	52	7.1
Lymphoma	34	5.0	Colorectum	26	3.6
Leukemia	26	3.8	Lung	25	3.4
Esophagus	24	3.5	Thyroid	23	3.1
Urinary Bladder	24	3.5	Leukemia	18	2.5
Larynx	21	3.1	Lymphoma	16	2.2
Prostate	20	2.9	Uterus	13	1.8

Fig 3



Of the 10 leading cancers in males in 2016-2017 Lung was the highest number of 295(21.7%) cases as compared to 2006-2007 it was 124 (18.1%). The Head and Neck cancer taken together was next in the

order with 273 (20.1%) in 2016-2017 and 104 (15.1%) in 2006-2007. The number of stomach cancer was 108 (7.95%) and 45 (6.6%) respectively



In females Breast cancer was the leading number with 668 (45.7%) and 257 (35.1%) in 2016-2017 and 2006-2007 respectively. The number of Cancer cervix were 126 (8.6%) and 71 (9.7%) respectively. The Head and Neck cancer taken together was next in the order with 114 (7.8%) in 2016-2017 and 52 (7.1%) in 2006-2007.

The commonest cancer in 0-14 years age group was found to be Leukemia whereas in 15-34 years age group the commonest cancer was stomach in males and Breast in females.

Table 5: Major pediatric cancers (0-14 years)

Site	Males 2016-2017	Males 2006-2007	Females 2016-2017	Females 2006-2007
Testis	1	1		
Lymphoma	2	1	2	
Leukemia	3		3	1
Brain	2		2	2

Major cancers in 14-34 age groups

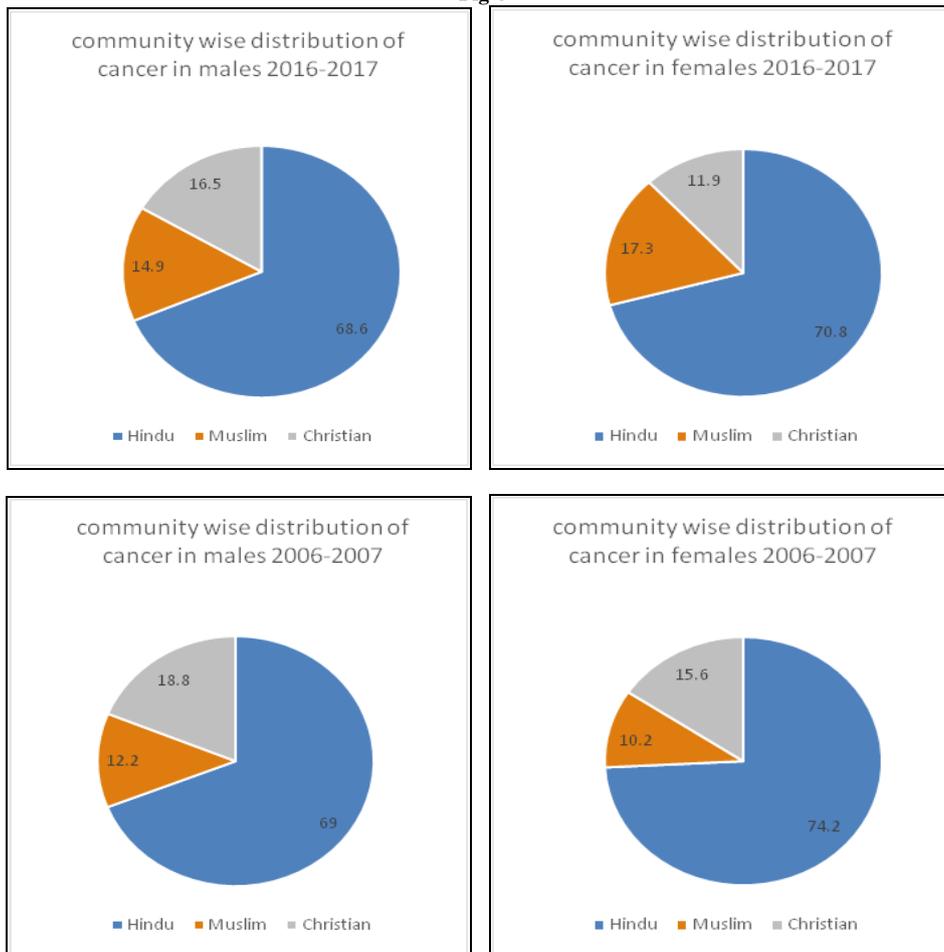
Site	Males 2016-2017	Males 2006-2007	Females 2016-2017	Females 2006-2007
Stomach	22	1		
Colorectum	15	2	11	2
Breast			46	11
Ovary			10	9
H & N	10	2		
Lymphoma	10	2	8	3
Liver	3	1		

In the age group 35-64 years there were 823 males and 1056 females in 2016-2017 and the same were 19 males and 44 females in 2006-2007. The commonest cancer was lung 198 in 2016-2017 and 78 in 2006-2007. In females the number of breast cases outnumbered with 398 in 2016-2017 and 207 in 2006-2007.

In the age group above 65 head and cancers were high with 154 males in 2016-2017 but in 2006-2007 it was lung with 45 cases.

Community wise distribution of cancer patients

Fig 4



Cancer cases in various religious communities showed that in 2016-2017 among males there were 932 (68.6%) Hindus, 202 (14.9%) Muslims and 225 (16.5%) Christians and among females there were 1036 (70.8%) Hindus, 253 (17.3%) Muslims and 174 (11.9%) Christians. In 2006-2007 among males there were 474 (69%) Hindus, 84 (12.2%) Muslims and 129 (18.8%) Christians and among females there were 543 (74.2%) Hindus, 75 (10.2%) Muslims and 114 (15.6%) Christians.

DISCUSSION

Globally, more than one million new cases of cancer are diagnosed each year. This makes cancer one of the most common in the world. Cancer has become a major public health problem in developing countries like India. Epidemiological studies conducted on cancer have shown that 70-90% of all cancers are environmental. Life style related factors are the most important and preventable among the environmental exposures. Tobacco consumptions either as chewing tobacco or smoking tobacco will account for 50% of all cancers in men. Dietary practices, reproductive and sexual practices etc. will account for 20-30% of cancers. Appropriate changes in life style can reduce the mortality and morbidity from a good proportion of cancer and heart diseases. (Regional Cancer Center, Thiruvananthapuram). According to the study of Mohan Indira et.al. (2005), the breast cancer is one of the most common cancers among women. In the study of L. Stayanarayan et.al. (2008), it was mentioned that smoking is known to be a major cause of cancer. Cancers caused due to tobacco smoking are lung, urinary bladder, oral cavity (mouth and tongue), Sino-nasal cavity, nasopharynx, oro-pharynx and hypopharynx, larynx, pancreas, esophagus, stomach, liver, uterine cervix and myeloid leukemia.

In the research article Projection of Cancer Incident Cases for India -Till 2026 by Neevan DR Dsouza, NS Murthy, RY Aras it is stated that leading sites of cancers

in males are lung, oesophagus, larynx, mouth, tongue and in females breast and cervix uteri. The main factors contributing to high burden of cancer over the years is the increase in the population size.

CONCLUSION

The number of cancer cases registered at Government T.D Medical College Alappuzha during the year 2016-17 has almost doubled as compared to a decade back. The mean age for both male and female cancer cases have decreased in a span of 10 years. The number of cancer breast is on the high in females and is showing a trend towards earlier age at presentation. In males the leading number of cases even after a decade is cancer lung followed by head and neck cancers taken together. In females, cancer uterine cervix continues to be in the second highest position. Taking into consideration the religious communities the number of Hindus were the highest in both males and females and the trend of cancer was almost the same even after a decade but we observed a significant increase in the percentage of Muslim females in 2016-2017 as compared to a decade ago whereas the percentage of Christian females were less after a decade.

The total number of cancers with unknown primary site was high in 2006-2007 (19.6% in males and 12.4% in females) compared to 2016-2017 (1.4% in males and 1% in females). This could probably be attributed to the better investigatory modalities and the advent of PET scan.

This study has observed a near doubling of the number of cancer patients over a span of 10 years. This data should put us to a high alert since we can expect at least tripling of cases by 2026. Hence this must be taken as a warning sign for improving, strengthening and expanding the diagnostic and treatment facilities which with the current level, cannot tackle the future need.

Conflict of Interest: Authors have declared no conflicts of interest

REFERENCES

1. Kogevinas M, Pearce M, Susser M, et al: (eds): Socioeconomic Differences in Cancer Survival: A Review of the Evidence. Lyon, France, IARC Scientific Publications, 1997, pp 177-206
2. Woods LM, Rachet B, Coleman MP: Origins of socio-economic inequalities in cancer survival: A review. *Ann Oncol* 17:5-19, 2006
3. Boyd C, Zhang-Salomons JY, Groome PA, et al: Associations between community income and cancer survival in Ontario, Canada, and the United States. *J Clin Oncol* 17:2244-2255, 1999
4. Mackillop WJ, Zhang-Salomons J, Boyd CJ, et al: Associations between community

- income and cancer incidence in Canada and the United States. *Cancer* 89:901-912, 2000
5. Booth CM, Li G, Zhang-Salomons J, et al: The impact of socioeconomic status on stage of cancer at diagnosis and survival: A population-based study in Ontario, Canada. *Cancer* 116:4160-4167, 2010
6. Website <http://www.ncdirindia.org> date of citation 12/11/2019
7. International Classification of Diseases (ICD) information sheet
8. Projection of Cancer Incident Cases for India -Till 2026; Neevan DR Dsouza, NS Murthy, RY Aras; *Asian Pac J Cancer Prev*, 14 (7), 4379-4386

How to cite this article: Ninan PJ, Sivaramakrishnan R, Bindu SM. Study of cancer trends in Government T.D. Medical College Alappuzha during the year 2016-2017 and comparison with trend a decade ago. *Gal Int J Health Sci Res.* 2020; 5(3): 67-74.
