WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 6.805
Volume 5, Issue 9, 1311-1323. Research Article ISSN 2277– 7105

# INCIDENCE OF DIFFERENT TYPES OF CANCERS AND CANCER TREATMENTS IN TERTIARY CARE HOSPITAL, BANGALORE, INDIA

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Article Received on
12 July 2016,

Revised on 03 Aug 2016,
Accepted on 24 Aug 2016

DOI: 10.20959/wjpr20169-6983

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## ABSTRACT

**Background:** Cancer is the second most causes of dead in present century and many studies were carried out to determine the most frequency occurring type of cancer. Apart from environmental factors like drinking, smoking, etc. Which is causing cancer, genetic factor is prominent in last decade. As India is a second most populated country with different races, the study of different types of cancer may help to find the more effective therapy as well as control and prevention of cancer by education. **Objective:** to study the incidence of different types of cancer in tertiary care hospital in urban area of Bangalore. **Material and methods:** this study was retrospective and prospective observational study conducted for period of six months on 102 patients who were suffering from cancers. Data collection forms were designed and prepared, the data were collected and analyzed, and the incidence of the different types of cancer was calculated. **Results:** the results represented that, majority of female (57.84%), age group of 41-50 years (28.43%) were suffering breast (22.54%) carcinoma (87.25%).Majority did adjuvant chemotherapy (53.92%) with 5-flouro uracil (5-FU) and platinum compound combination (13.72%) and 5-FU and radiotherapy (13.72%) for six cycles (45.09%).**Conclusion:** results of present study were showed high incidence for breast carcinoma, the most drug used was 5-FU, platinum compound and radiotherapy, education on early detection of breast cancer has important role in inhibition of complexity of chemotherapy and reduce the rate of relapsing, followed by improving the quality life of patients.

**KEYWORDS:** incidence of cancer, observational study, education and early detection, breast carcinoma.

## INTRODUCTION

Cancer involve in increase the cell numbers abnormally, with a potential of spread to other part of body .all lumps are not cancer, and two types of tumors are available, benign which is not spreading and malignant which have tendency to invade.[1] cancer cells are usually prescribed by body part which they are originated from.as the body part contain different types of tissues, cancer are classified by type of cells which originated.[1]

Carcinoma is a type of cancer which derived from epithelial cells, most common type of cancer in breast, prostate, lung, and colon. Carcinoma occurs when DNA alters and leads to fast growing and abnormal cells, different types of carcinoma are Adenocarcinoma which refers to gland related cancer. Squamous carcinoma is indicative of squamous differentiation (keratinization). Adeno-squamous carcinoma contains both gland and squamous cancer cells. Anaplastic carcinoma is heterogeneous group of high grade carcinoma cell lacking distinct histological or cytological evidence of any of the more specifically differentiated neoplasms. Large cell carcinoma, polygonal shaped cells without cytoplasm. Small cell carcinoma spindle shaped cells.[2]

Sarcoma is cancer of connective tissue origins, thus tumor is made of mesenchyme cells like bone, cartilage, fat, muscles, vascular or homeopathic tissue. This cancer is quite rare.[3] Lymphoma is derived from lymphatic cells, rate of metastasis (spreading) is high because in transfer between lymph and blood, its classified into two types, Hodgkin lymphoma, is most common type of lymphoma and presence of Reed-Sternberg cells.[4] Non-Hodgkin lymphoma, is all lymphoma than Hodgkin lymphoma.[5] Leukemia is bone marrow cancer which leads to high numbers of abnormal white blood cells(WBC), as these WBCs are immature, called blast or leukemia.[6] its most common in children.[7] There are four types of leukemia, Acute lymphoblastic leukemia (ALL), Acute myeloid leukemia (AML), Chronic lymphocytic Leukemia (CLL) and Chronic myeloid leukemia (CML).[8] Germ cells tumor, drives from pluripotent stem cells, mostly occurs in testicle or ovary.[9] There are germinomatous (seminomatous) germ cells and Nongerminomatous (non seminomatous) germ cells.[10] Blastoma is cancer of embryonic tissue origins and are mostly common in children.

Cancers usually named after organ like liver parenchyma cancer is called hepato-carcinoma, and for benign tumors the suffix of -oma is added after names of organ like melanoma. Chemotherapy is known as cytotoxic or neoplastic agents, which is given to cancer patients

for purpose of curing the cancer, chemotherapy can be used alone or with other treatments.[11] there are two types of chemotherapy , Adjuvant is chemotherapy after surgery or radiation for the purpose of killing cancer cells which may be left over during surgery, Neoadjuvant chemotherapy is before surgery or radiation ,for shrinking tumor cells.[11]

When cancer in advanced stage, chemotherapy drugs may be used to reduce the symptoms and improve the quality of the patients, not as treatment, this is called palliative therapy[12] Present study focused on the incidence of the cancer in urban area of Bangalore city.

## MATERIAL AMD METHODS

### Place of study and duration of Study

The study was being performed in the hospital sector for a period of 6 months in oncology department, Bangalore, India.

### Source of data collection

Data was being collected from patient case files and by help of questioners' form, from the patients who was admitted in the oncology department.

### Inclusion criteria

All patients who undergo chemotherapy with two years and above ages, both gender.

### Exclusion Criteria

Patients who were not willing to participate.

### Method

The case collection was done through accurately and precisely designed form (Patient profile form). This was designed in such a way that it includes all the necessary information with regards to study like demographic details, past medical history, present diagnosis.[13] the information was obtained from patient's case file, which contained drug charts, doctors and nurses notes. The observation was done on patients who subjected to chemotherapy, radiotherapy or/and both. The patients further divided based on their ages from 2 years till 80 years old with gap of almost 10 years.

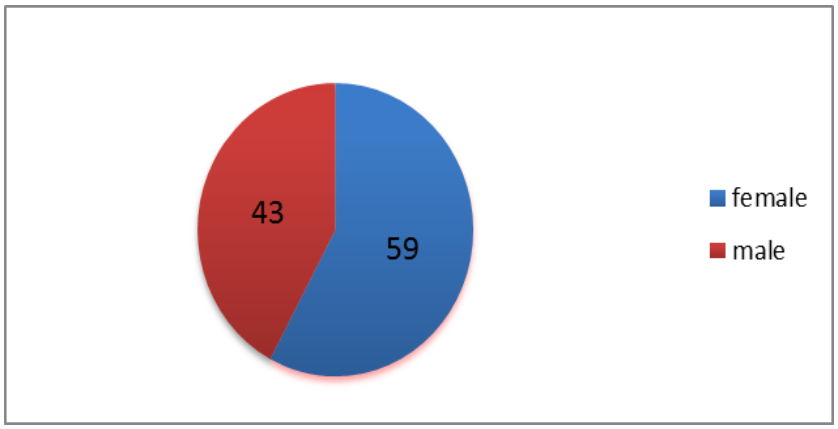
## RESULTS

### Gender of Patients

As showed in table1 and figure2, the total number of the patients admitted in oncology department was 102, and majority were female (59) with percentage of 57.84 whereas male were 43(42.16 %). This results explained that majority of the women were suffering from cancer in this hospital.

**Table: 1 Number of patients in each gender**

| Gender | No of patients | Incidence (%) |
|---|---|---|
| Female | 59 | 57.84 |
| male | 43 | 42.16 |
| total | 102 | 100 |




**Figures1.number of patients in each gender**

### Age distribution of cancer patients

The patients were enrolled in different age groups between two years till 80 years old, Highest number the of the patients whom suffering from cancer was 29 (28.43 %) for group range of 41-50 years old. Followed by age group of 51-60(27.45%), results represented in figure 2 table2. Many studies believed that as the age increased the number of patients whom suffering from cancer increase, but in present study the maximum patients were in age groups of 41-50 years although age groups of 71-80 years showed less patients' number, based on this results, cancer is not the disease of elderly.

**Table 2.age distribution of cancer patients**

| Age range (years) | No of patients | Incidence (%) |
|---|---|---|
| 2-10 | 1 | 0.98% |
| 11-20 | 2 | 1.96% |

| | | |
|---|---|---|
| 21-30 | 6 | 5.88% |
| 31-40 | 14 | 13.75% |
| 41-50 | 29 | 28.43% |
| 51-60 | 28 | 27.45% |
| 61-70 | 11 | 10.78 % |
| 71-80 | 8 | 7.84 % |
| Total | N=102 | |

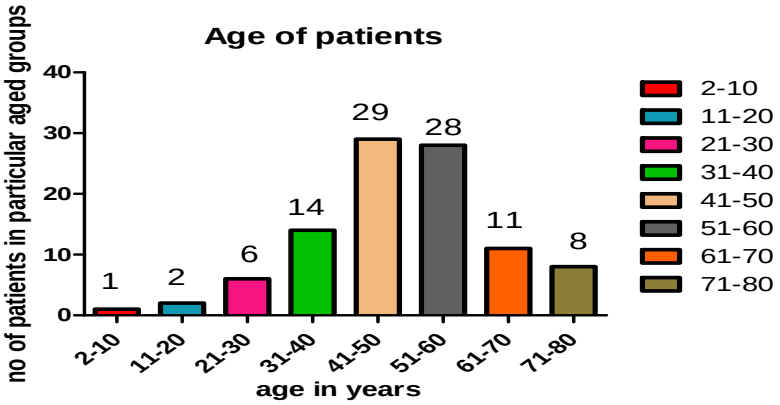



**Figure2.age distribution of cancer patients**

**Different types cancer**

According to the table 3 and figure 3, the maximum number the patients was found to be 89 with incidence of 87.25% and suffering from carcinoma. In present study the carcinoma was most occurring whereas myeloma (1.96%) was the least.

**Table: 3 Types of cancer**

| Type of cancer | No of patients | Incidence % |
|---|---|---|
| Carcinoma | 89 | 87.25 |
| Sarcoma | 8 | 7.84 |
| Myeloma | 2 | 1.96 |
| lymphoma | 3 | 2.94 |

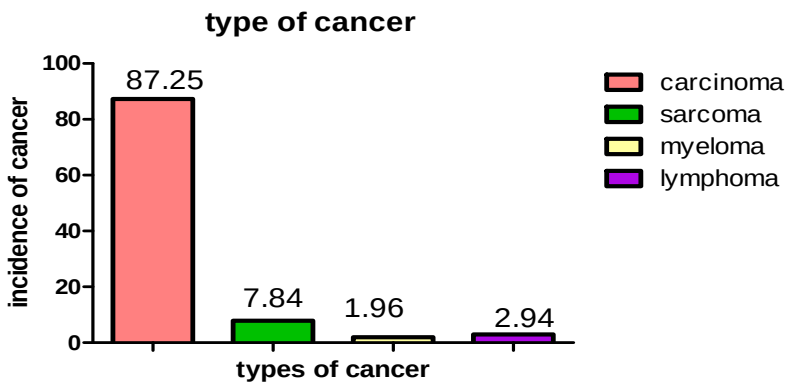


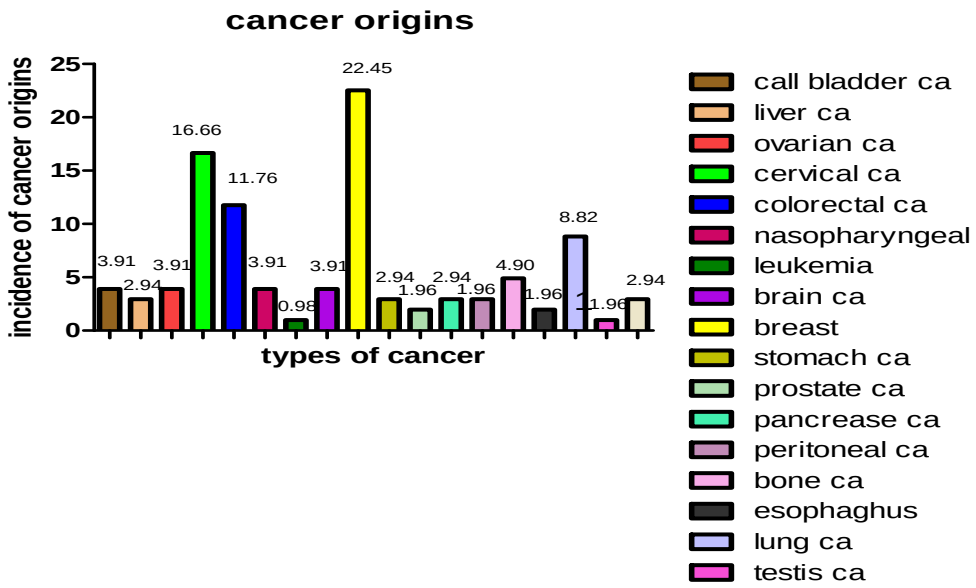

**Figure: 3 Incidence of types of cancer**

**Cancer and origins**

this study , focused on the origin organs which cancer cell derived from, as results revealed in figure 4 and table 4, the highest incidence were observed for breast 22.54% (n=23) followed by cervical 16.66% (n=17) and colorectal 11.76(n=11), which was indicated that the majority of cancer was breast and cervical carcinoma. These two cancers were specified for female only.

**Table4.incidence of cancer origins**

| Type of cancer | No of patients | incidence % |
|---|---|---|
| Gall bladder | 4 | 3.91 |
| Liver | 3 | 2.94 |
| Ovarian | 4 | 3.91 |
| cervical | 17 | 16.66 |
| colorectal | 12 | 11.76 |
| nasophygeal | 4 | 3.91 |
| Leukemia | 1 | 0.980 |
| brain | 4 | 3.91 |
| Breast | 23 | 22.54 |
| Stomach | 3 | 2.94 |
| prostate | 2 | 1.96 |
| pancreas | 3 | 2.94 |
| peritoneal | 2 | 1.96 |
| bone | 5 | 4.90 |
| lung | 9 | 8.82 |
| testis | 1 | 0.980 |
| lymphoma | 3 | 2.94 |
| esophagus | 2 | 1.96 |




**Graph: 4 Incidence of Cancer origins**

**Cancer therapy**

Different types of cancer treatment was shown in table 5 and figure 5, out of 102 cancer patients , the adjuvant chemotherapy was 55 (53.92%) were done adjuvant chemotherapy, followed by the chemo-radiotherapy 23 (22.54%) together. The least used therapy was palliative (5.88%) in this hospital. These results presented that majority of the cancer patients was done chemotherapy after surgery and radiotherapy.

**Table: 5. Cancer therapy**

| Treatment | No of patients | Percentage % |
|---|---|---|
| Adjuvant | 55 | 53.92 |
| Neoadjuvant | 6 | 5.88 |
| Chemo-radiotherapy | 23 | 22.45 |
| radiotherapy | 12 | 11.76 |
| Palliative therapy | 6 | 5.88 |

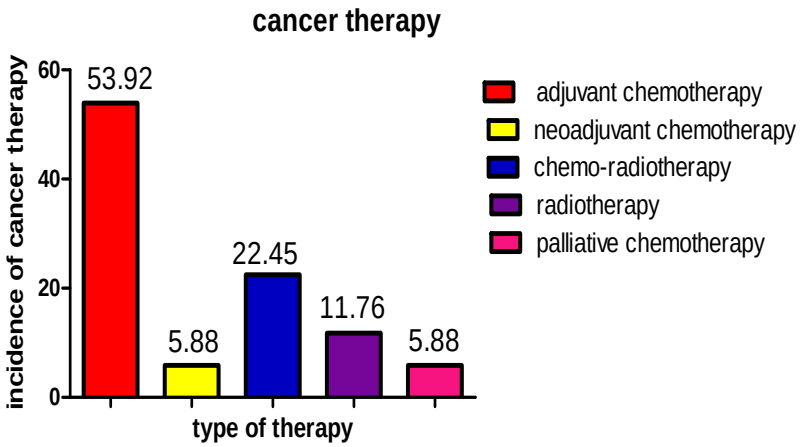



**Figure: 5 Cancer therapy**

**Chemotherapy drugs**

Among the chemotherapy drugs used in BGS global hospital, the cisplatin and radiotherapy together (13.72%) and combination of 5-FU and platinum compound (13.72%) were found to be as should be mentioned that oncology department, set up a particular protocol for cancer therapy based on age, types of cancer and stages of cancer. Results were showed in table6 and figure 6.

**Table: 6 Chemotherapy drugs**

| treatment | No of patients | Percentage % |
|---|---|---|
| Cisplatin | 12 | 11.78 |
| cisplatin+radiotherapy | 14 | 13.72 |
| pt compound+taxol | 8 | 7.84 |

| | | |
|---|---|---|
| pt compound+taxol+radio | 1 | 0.98 |
| 5-FU+Docetaxol+cisplatin | 3 | 2.94 |
| 5-FU+pt compound | 14 | 13.72 |
| vincristin | 5 | 4.90 |
| vin+dox+etoposide+radio | 2 | 1.96 |
| cyclo+dox | 2 | 1.96 |
| cyclo+dox+radiotherapy | 2 | 1.96 |
| cyclo+brotezomib+radio | 3 | 2.94 |
| docetaxol | 1 | 0.98 |
| docetaxol+radiatiotherapy | 2 | 1.96 |
| etoposide +5-FU | 1 | 0.98 |
| etoposide+radiotherapy | 2 | 1.96 |
| docetaxol+dox+cyclo | 11 | 10.78 |
| cis+bleomycin+etoposide | 3 | 2.96 |
| cetabine+pt compund | 7 | 6.84 |
| cetabine+pt compund+radio | 3 | 2.94 |
| decetabine | 2 | 1.96 |

Pt:platinum compound, radio: radiotherapy, 5-FU:5 fluoro uracil, Cis:cisplatin, cyclo:cyclophosphamide, Dox:doxorubicine

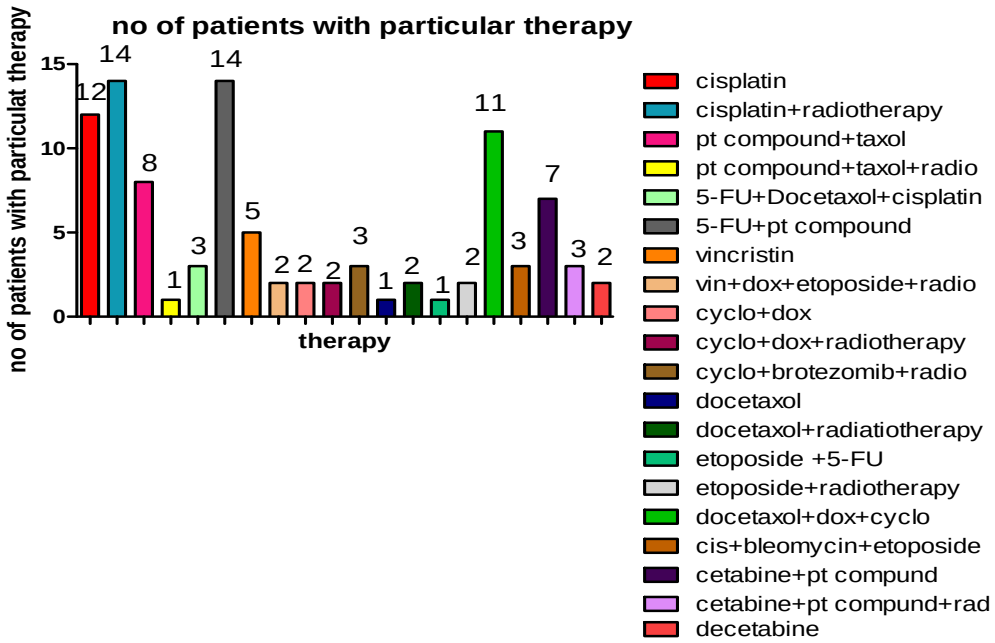


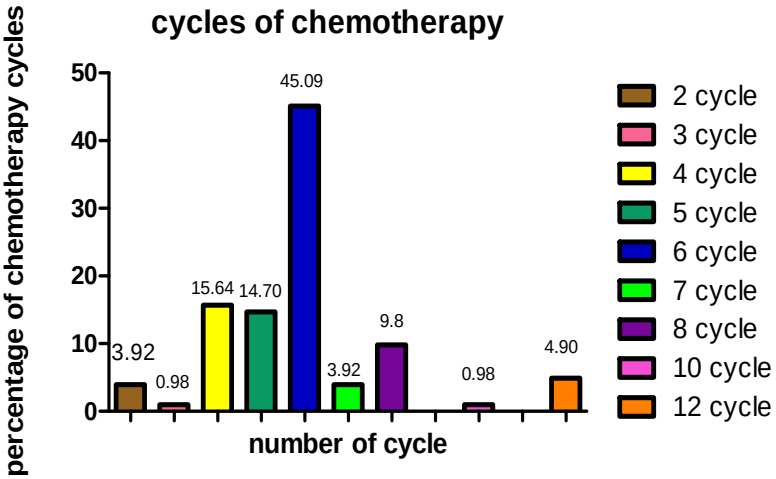

**Figure: 6 Chemotherapy drugs.**

**Cycles of chemotherapy**

The heights number of patient whom underwent chemotherapy, was found to be with 6 cycles (45.09%) followed by 4 cycles (15.68%) and 5 cycles (14.70). There was no patient with 9 and 11 cycles. The least was 3cycles (0.98%).result was showed in table7 and figure7.

**Table: 7 cycles of chemotherapy**

| cycles | No of patient | Percentage % |
|---|---|---|
| 2 | 4 | 3.92 |
| 3 | 1 | 0.98 |
| 4 | 16 | 15.68 |
| 5 | 15 | 14.70 |
| 6 | 46 | 45.09 |
| 7 | 4 | 3.92 |
| 8 | 10 | 9.80 |
| 10 | 1 | 0.98 |
| 12 | 5 | 4.90 |




**Figures7. Cycles of chemotherapy**

## DISCUSSION

Cancer is a disease that causes cells in the body to change and grow out of control. Most types of cancer cells eventually form a lump or mass called a tumor, and are named after the part of the body where the tumor originates.[14] According to present study, majority of female (57.84%), aged group of 41-50 years old (28.43%) were found to be suffering from cancer, other studies were showed that females and age groups of 40 years and above are more susceptible to breast cancer although the younger aged group with family history of breast cancer may develop breast cancer. [15][16] environmental factors, imbalanced metabolic pathway and genes are major factors of developing cancer, in brief alcohol consumption, smoking, air pollution, junk foods, etc are environmental factors which causes cancer,imblanaced in metabolic pathway occurs when body cant detoxified the oxygen species due to accumulation of these toxic agents inside the cells and formation of reactive species which are highly attractive towards the macromolecule DNA and lead to alter the

DNA structure and finally genotoxic and mutation. Presence of cancer gene is inherited and passes from parents to off spring and can cause cancer in any point of time. The most frequent cancer was carcinoma (87.25%), carcinoma is major type of cancer and rate of invasion is high [17] its due to their origin which is epithelial tissue and rate of multiplication is high in epithelial tissue than other tissues relatively and as its usually on surface, metastasis is high and early detection of this carcinoma reduce the complexity of cancer and may inhibit metastasis. In present study, majority of the carcinoma were found with breast originates (22.54%).[18] so many studies indicated that breast carcinoma is major occurring types of cancer among female, although it has different subtype, but as all develop in breast, consider as breast carcinoma,[19] education of the patients in India will help in early detection of the breast cancer, which improve the quality of life of patient as it has the economic advantage and reduce the burden to society and person life.

Main Chemotherapy was adjuvant (53.92%) and the most drugs used were cisplatin and radiotherapy together (13.72%) and combination of 5-FU and platinum compound (13.72%). the platinum compound, carboplatin, oxiplatin or cisplatin were used in this hospital for six cycles. (45.09%). Cisplatin is a most used drug for majority of the cancers[20], its used for bladder, head and neck, cervical, breast cancer, it forms cross link with DNA and inhibit the cell division.[21] Platinum compound were the most effective and frequent anti- neoplastic drugs.[22] but the major sides effect of them are nephrotoxicity, myelo-suppression, ototoxicity and neurotoxicity.[23] 5-FU is anti-metabolite and pyrimidine analog, used for breast, cervical, colorectal, pancreas, head and neck cancer[24]

Radiotherapy is the ionizing radiation which is used along with chemotherapy drugs to control and treat cancer, it is gamma or x-ray, and it kills cancer cells by damaging the DNA.[25] it's used for breast, prostate, head and neck, cervical, etc. and major toxicity is infertility and damage to surface epithelial cells.

## CONCLUSION

This study concluded breast carcinoma was the most common type of cancer in female, In tertiary care hospital, and platinum compound like carboplatin, cisplatin and oxiplatin and 5-FU were the most used chemotherapy drugs. Radiation therapy was given as palliative, after or before chemotherapy or along with chemotherapy.

## ABBREVIATION

Chemo:chemotherapy, DNA:Deoxy-ribo nucleic acid, Pt:platinum compound, radio: radiotherapy, 5-FU:5 fluoro uracil, Cis:cisplatin, cyclo:cyclophosphamide, Dox:doxorubicine, Ca:cancer, ALL: lymphoblastic leukemia, AML: Acute myeloid leukemia, CLL: Chronic lymphocytic Leukemia. CML: Chronic myeloid Leukemia, WBC:white blood cells.

## ACKNOWLDEGMENT

We would like to express our appreciation to all who supported this study especially Professor Dr. S. Mohan, the director of PES college of pharmacy, and Dr. J. Saravanan principal of PES College of pharmacy who granted us approval for the collection of primary data, and Head of pharmacy practice Mr. Srinivasan. R who supported and encourage us during this studies. Special thanks to all those illuminating views and inspiration gave us strength and motivation to complete this study within a limited period of time.

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