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## Research

### A retrospective study on prescription patterns and therapeutic approaches for various cancer chemotherapies in tertiary care hospital, Narasaraopet.

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|   |   |
|---|---|
|    | <b>Abstract</b>   |
| Published on: 12 Mar 2025   | <b>Background:</b> Cancer is a life-threatening disease that causes death. Cancer is the leading cause of death. There are several factors for the formation of cancers. According to survey conducted by the International Agency for Research on Cancer (IARC) and the American Cancer Society (ACS) in 2022 20 million new cancer cases are raised by 2022 and 9.7 million deaths.   |
| Published by:<br>DrSriram Publications  | <b>Aim/Objectives:</b> This study assesses the prescription patterns and therapeutic approaches for various types of cancer. To evaluate the drug prescription patterns of Anti-Cancer drugs in cancer patients in tertiary care hospital, to observe different dose regimens, to study the efficacy of anti-cancer drugs in various cancer chemotherapies, and to determine the survival rate in cancer patients.  |
| 2025  All rights reserved.<br><br><a href="https://creativecommons.org/licenses/by/4.0/">Creative Commons Attribution 4.0 International License.</a> | <b>Materials &amp; methods:</b> A retrospective observational study in a period of 5 months in a tertiary care hospital.<br><b>Results:</b> A total of 80 patients are enrolled in this study after diagnosed as the cancer. And majority of cancer patients are females. And cancer attacks majorly in the age group of 51-60. Cervix, and breast cancers in females are more. Based on the condition and severity of the patients the different types of cytotoxic drugs are used. Majorly the platinum-based drugs like cisplatin, carboplatin, and oxaliplatin are used. The drugs like ondansetron, dexamethasone, chlorpheniramine maleate, ranitidine, pantoprazole, and etc., drugs are given to control or to suppress, the side effects caused by the cytotoxic drugs.<br><b>Conclusion:</b> The cytotoxic drugs are given in a controlled manner, there is a gap of 3 weeks for every chemotherapy cycle. The quality of life and survival rate can be increased by chemotherapy but there is a chance of death.<br><b>Keywords:</b> Chemotherapy, carcinogens, cancer, tumor, prescription patterns, metastasis, neoplasm, cytotoxic drugs. |

## INTRODUCTION

All know that cancer is a life-threatening disease. According to WHO Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells into surrounding tissues. Uncontrolled growth is called metastasis if untreated leads to death. The uncontrolled growth occurs due to various factors that may be external or internal. The external factors may be pollutants, tobacco, radiations (more exposure to sunlight UV rays causes melanoma), chemicals, infections (certain viruses, bacteria, or parasites cause cancer), and lifestyle factors like diet, physical activity, weight, and age. Internal factors include gene mutations (inherited mutations, and errors during cell division). The factors that cause cancer are called carcinogens and the process of developing cancer is called carcinogenicity. Carcinogens that attack the human body alter the genes and cause mutations in genes which results in cancer, according to a survey by the International Agency for Research on Cancer (IARC) and the American Cancer Society (ACS) in 2022 new cancer cases were reached to 20 million by the year 2022 and also 9.7 million deaths. The mortality, frequency, and survival expectancy of 15 leading types of cancer Lung cancer is the most probably diagnosed cancer followed by breast cancer in females, colorectal cancer, prostate, cervix, bladder, non-Hodgkin lymphoma, esophagus, pancreas, leukemia, and kidney.<sup>12</sup>

Carcinogens that enter into the physiologic system can attack and damage the genetic code results in and are called point mutations, chromosomal rearrangements, and epigenic alterations. These all-cause cell cycle control loss- loss of activation of tumor suppressor genes and activation of oncogenes. Tumor suppressor genes and oncogene activity alterations lead to uncontrolled cell proliferation in these process cancer cells develop mechanism to evade apoptosis<sup>14</sup>. Cancer cells promote the formation of new blood vessels to supply oxygen and nutrients and invade into surrounding tissue and organs, disrupting normal tissue characteristics. The formed cancer cells break away from the primary tumor and enter into the blood stream or lymphatic system and colonize distant organs forming secondary tumors called metastasis or neoplasm<sup>3</sup>. Different types of proteins are released into the body during the growth of tumor called tumor markers these tumor markers helps to diagnose the cancer<sup>9,12</sup>.

There are different types of therapeutic approaches for treating cancer like surgery, immunotherapy, majorly chemotherapy, hormonal therapy, radiotherapy to kill unwanted cells.<sup>4,13</sup> Along with in the treatment of prostate cancer targeted therapy is used that targets the androgen receptor signaling pathway.<sup>5</sup> Nano sponge technology is a unique novel drug delivery system with highly absorbent hydrogel material. These nano sponges can absorb and encapsulate harmful substances in the body. Nanosponges have ability to absorb and trap large molecules such as toxins. The self-assembled DNA nanosponges with multivalent ligands target the tumor cells.<sup>6</sup> The early-stage detection helps more for curing of cancer, but it is much difficult due to the signs and symptoms are not accurately expressed in patients. The common signs and symptoms in cancer patients are fatigue, extreme tiredness that doesn't get better with rest, weight loss, eating problems, belly pain, swelling and lumps in body parts, pains with no reasons, cough, fever night sweats, headache, vision problems, urinary bladder function changes such as pain when passing urine, puss in urine, change in bowel habits such as constipation or diarrhea or change in stool looks<sup>10</sup>. The objective of present study is to evaluate prescription patterns of cancer patients. To provide evidence based epidemiological data on prescription patterns and therapeutic approaches for various types of cancer and efficacy of the anti-cancer drugs used in chemotherapy treatment, to observe different dose regimens in different types of cancers, to study the efficacy of chemotherapeutic drugs in various cancer chemotherapies and to determine the survival rate of cancer patients. Evaluation of prescription patterns is a tool for assessing the prescribing, dispensing and distribution of chemotherapeutic drugs. The aim of prescription pattern study is to facilitate rational use of drugs.<sup>7</sup> And to increase the prescription quality.<sup>8</sup>

## MATERIALS AND METHODS

A retrospective observational study conducted in a tertiary care hospital for a period of 5 months in Narasaraopet. Study conducted among the 80 number of patients (n=80) who are diagnoses as the cancer. In this study only the patients who are diagnosed as cancer are included, and only the patient's receiving chemotherapy are included, patients of either male and female genders are included from 14- 80 age groups. Patients receiving other than chemotherapy are excluded. The source of data is collected from the inpatient's medication charts and from case sheets. The data included in the study are age, gender, diagnosis includes type of cancer is found in patient, type of treatment that is therapeutic approach, drugs used in chemotherapy, other drugs used along with chemotherapy.

**RESULTS****Age wise distribution of patients****Table 1: Distribution based on the age**

| S. No | Age group (Years) | No. of patients (n=80) | Percentage (%) |
|-------|-------------------|------------------------|----------------|
| 1.    | 11-20             | 1                      | 1.25           |
| 2.    | 21-30             | 0                      | 0              |
| 3.    | 31-40             | 11                     | 13.7           |
| 4.    | 41-50             | 24                     | 30             |
| 5.    | 51-60             | 27                     | 33.7           |
| 6.    | 61-70             | 12                     | 15             |
| 7.    | 71-80             | 5                      | 6.2            |

**Distribution based on gender****Table 2: Gender distribution of patients**

| S. No | Gender | No. of patients (n=80) | Percentage (%) |
|-------|--------|------------------------|----------------|
| 1.    | Male   | 19                     | 23.7           |
| 2.    | Female | 61                     | 76.2           |

**Type of cancers found****Table 3: Types and number of cancers**

| S. No | Type of cancer | No. of cases |
|-------|----------------|--------------|
| 1.    | Bladder cancer | 4            |
| 2.    | Breast Right   | 10           |
|       | Left           | 8            |
| 3.    | Cervix         | 16           |
| 4.    | Colon cancer   | 2            |
| 5.    | Endometrium    | 5            |
| 6.    | Esophagus      | 2            |
| 7.    | Jaw            | 1            |
| 8.    | Liver          | 4            |
| 9.    | Lung           | 2            |
| 10.   | Lymphoma       | 2            |
| 11.   | Nasal          | 2            |
| 12.   | Ovary          | 6            |
| 13.   | Prostate       | 4            |
| 14.   | Rectum         | 2            |
| 15.   | Stomach        | 8            |
| 16.   | Sigmoid colon  | 2            |

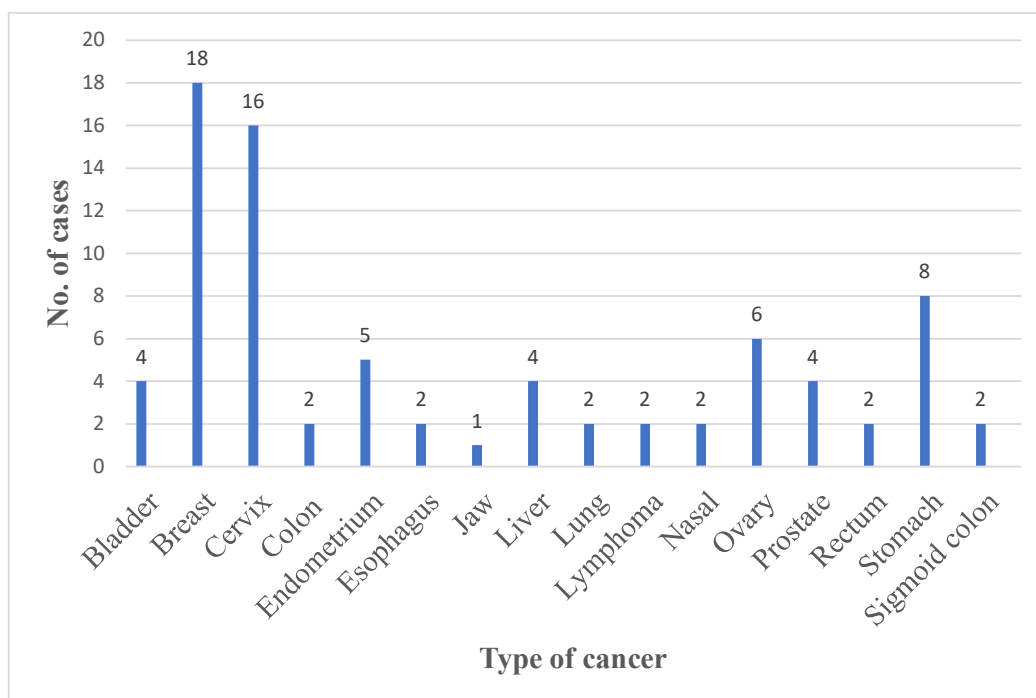


Fig 1: Types and number of cases.

**Cancer diagnosed in different age ranges**

**Table 4: Types of cancers found in different age ranges and number of cancers**

| S. No     | Age group | Type of cancer | No. of cases |
|-----------|-----------|----------------|--------------|
| 1.        | 10-20     | Ovary          | 1            |
| 2.        | 21-30     | ---            | ---          |
| 3.        | 31-40     | Breast         | 1            |
|           |           | Bladder        | 2            |
|           |           | Cervix         | 5            |
|           |           | Nasal          | 2            |
| 4.        | 41-50     | Breast         | 8            |
|           |           | Cervix         | 6            |
|           |           | Colon          | 3            |
|           |           | Endometrium    | 2            |
|           |           | Ovary          | 4            |
|           |           | Stomach        | 2            |
| 5.        | 51-60     | Breast         | 6            |
|           |           | Cervix         | 4            |
|           |           | Colon          | 1            |
|           |           | Endometrium    | 2            |
|           |           | Esophagus      | 1            |
|           |           | Liver          | 2            |
|           |           | Lung           | 2            |
|           |           | Lymphoma       | 2            |
|           |           | Ovary          | 5            |
|           |           | Stomach        | 3            |
|           |           | 6.             | 61-70        |
| Breast    | 2         |                |              |
| Esophagus | 1         |                |              |
| Jaw       | 1         |                |              |
| Prostate  | 2         |                |              |
| Rectum    | 1         |                |              |

|    |       |          |   |
|----|-------|----------|---|
|    |       | Stomach  | 2 |
| 7. | 71-80 | Liver    | 2 |
|    |       | prostate | 2 |
|    |       | Rectum   | 1 |

### Drugs used in different cancers

**Table 5: Drugs used in different cancers**

| S. No | Cancer type    | Drug used                                     |
|-------|----------------|---|
| 1.    | Bladder cancer | Gemcitabine, Carboplatin                      |
| 2.    | Breast         | Adriamycin, Cyclophosphamide, Paclitaxel      |
| 3.    | Cervix         | Cisplatin, Paclitaxel, Carboplatin            |
| 4.    | Colon cancer   | Oxaliplatin, Capecitabine                     |
| 5.    | Endometrium    | Paclitaxel, Carboplatin, Cisplatin            |
| 6.    | Esophagus      | Irinotecan                                    |
| 7.    | Jaw            | Docetaxel, Cisplatin, 5-Fluoro uracil         |
| 8.    | Liver          | Gemcitabine, Cisplatin                        |
| 9.    | Lung           | Docetaxel, Pemetrexed, Carboplatin            |
| 10.   | Lymphoma       | Adriamycin, Cyclophosphamide, Vincristine     |
| 11.   | Nasal          | Cisplatin                                     |
| 12.   | Ovary          | Paclitaxel, Carboplatin, Etoposide, Cisplatin |
| 13.   | Prostate       | Docetaxel                                     |
| 14.   | Rectum         | Oxaliplatin                                   |
| 15.   | Stomach        | Oxaliplatin, Irinotecan                       |
| 16.   | Sigmoid colon  | Oxaliplatin, Capecitabine                     |

### Types of therapy and drug regimens

**Table 6: Drugs used in different cancers**

| S.No | Cancer type    | Monotherapy                 | Combination therapy   |
|------|----------------|-----------------------------|---|
| 1.   | Bladder cancer | ---                         | Gemcitabine + Carboplatin   |
| 2.   | Breast         | Adriamycin                  | Adriamycin + Cyclophosphamide & Adriamycin + Paclitaxel                           |
| 3.   | Cervix         | Cisplatin                   | Paclitaxel + Carboplatin  |
| 4.   | Colon cancer   | ---                         | Oxaliplatin + Capecitabine  |
| 5.   | Endometrium    | Cisplatin                   | Paclitaxel + Carboplatin  |
| 6.   | Esophagus      | Irinotecan                  | ---   |
| 7.   | Jaw            | ---                         | Docetaxel + Cisplatin + 5-Fluoro uracil   |
| 8.   | Liver          | ---                         | Gemcitabine + Cisplatin   |
| 9.   | Lung           | Docetaxel                   | Pemetrexed + Carboplatin  |
| 10.  | Lymphoma       | ---                         | Rituximab + Adriamycin + Cyclophosphamide + Vincristine                           |
| 11.  | Nasal          | Cisplatin                   | ---   |
| 12.  | Ovary          | ---                         | Paclitaxel + Carboplatin & Etoposide + Cisplatin                                  |
| 13.  | Prostate       | Docetaxel                   | ---   |
| 14.  | Rectum         | Oxaliplatin                 | ---   |
| 15.  | Stomach        | Oxaliplatin (or) Irinotecan | Oxaliplatin + Irinotecan<br>5 Fluorouracil + leucovorin + oxaliplatin + docetaxel |
| 16.  | Sigmoid colon  | ---                         | Oxaliplatin + Capecitabine  |

**Type of therapy received in number of patients****Table 7: Type of therapy received in number of patients**

| S. No | Type of therapy  | No. of patients | Percentage (%) |
|-------|------------------|-----------------|----------------|
| 1.    | Mono-therapy     | 40              | 50             |
| 2.    | Dual-therapy     | 35              | 43.75          |
| 3.    | Triple-therapy   | 1               | 1.25           |
| 4.    | Multiple-therapy | 4               | 5              |

**Number of drugs used in chemotherapy****Table 8: Number of prescriptions found for different chemotherapies**

| S. No | Type of therapy  | Drugs used  | No. of prescriptions |
|-------|------------------|---|----------------------|
| 1.    | Mono-therapy     | 1.Cisplatin   | 18                   |
|       |                  | 2.Oxaliplatin   | 11                   |
|       |                  | 3.Irinotecan  | 4                    |
|       |                  | 4.Adriamycin  | 2                    |
|       |                  | 5.Docetaxel   | 4                    |
|       |                  | 6.Paclitaxel  | 2                    |
| 2.    | Dual-therapy     | 1.Adriamycin + cyclophosphamide                           | 10                   |
|       |                  | 2.Cisplatin + Gemcitabine                                 | 2                    |
|       |                  | 3.Paclitaxel + Carboplatin                                | 10                   |
|       |                  | 4.Docetaxel + Cyclophosphamide                            | 4                    |
|       |                  | 5.Docetaxel + Prednisolone                                | 2                    |
|       |                  | 6.Pemetrexed + Carboplatin                                | 2                    |
|       |                  | 7.Etoposide + Cisplatin                                   | 2                    |
|       |                  | 8.Gemcitabine + Carboplatin                               | 1                    |
| 3.    | Triple-therapy   | 1.Docetaxel + Cisplatin + 5- fluorouracil                 | 1                    |
| 4.    | Multiple-therapy | 1.5-Fluorouracil + Leucovorin + Oxaliplatin + Docetaxel   | 2                    |
|       |                  | 2.Rituximab + Adriamycin + cyclophosphamide + Vincristine | 2                    |

**Cytotoxic drugs used in chemotherapy, their doses, route of administration and number of cytotoxic drugs found in prescriptions****Table 9: Cytotoxic drugs and their doses, route of administration and cytotoxic drugs found in number of prescriptions**

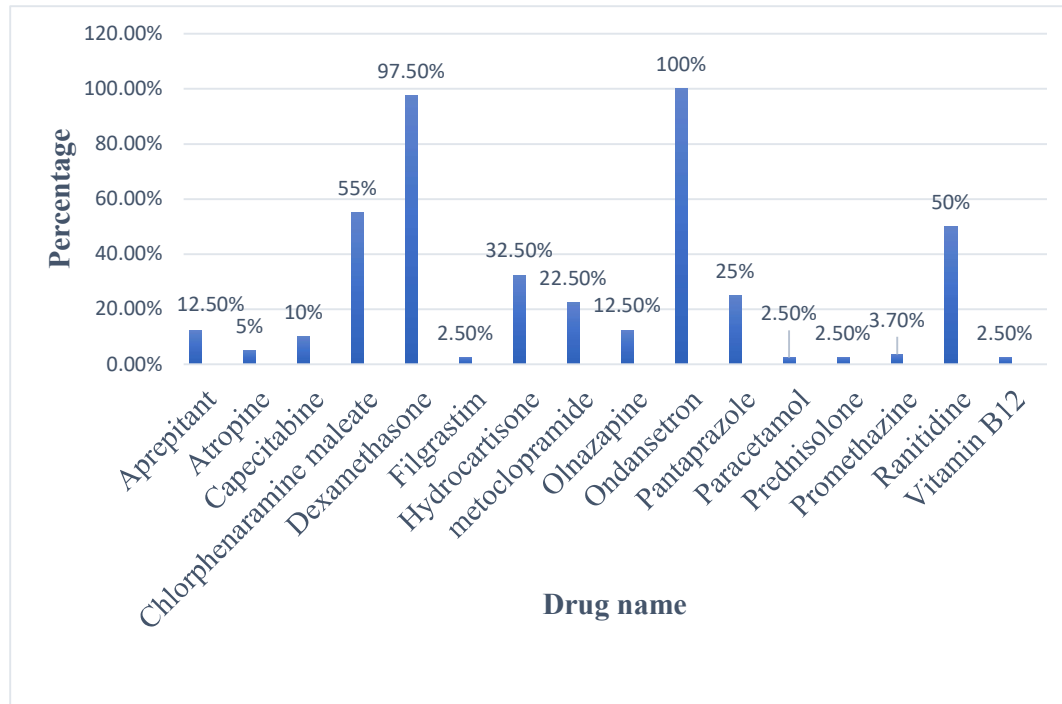
| S.no. | Drug             | Dose  | Route of administration | No. of prescriptions |
|-------|------------------|-------|-------------------------|----------------------|
| 1.    | Adriamycin       | 70mg  | I.V                     | 12                   |
|       |                  | 80mg  |                         |                      |
|       |                  | 100mg |                         |                      |
| 2.    | Carboplatin      | 190mg | I.V                     | 14                   |
|       |                  | 300mg |                         |                      |
|       |                  | 340mg |                         |                      |
|       |                  | 410mg |                         |                      |
|       |                  | 450mg |                         |                      |
|       |                  | 530mg |                         |                      |
| 3.    | Cisplatin        | 25mg  | I.V                     | 23                   |
|       |                  | 40mg  |                         |                      |
|       |                  | 60mg  |                         |                      |
|       |                  | 70mg  |                         |                      |
| 4.    | Cyclophosphamide | 770mg | I.V                     | 16                   |
|       |                  | 800mg |                         |                      |
|       |                  | 880mg |                         |                      |
|       |                  | 900mg |                         |                      |

|     |                |   |     |    |
|-----|----------------|---|-----|----|
|     |                | 1000mg<br>1100mg                          |     |    |
| 5.  | Docetaxel      | 60mg<br>80mg<br>100mg<br>110mg<br>120mg   | I.V | 13 |
| 6.  | Etoposide      | 130mg                                     | I.V | 2  |
| 7.  | Gemcitabine    | 100mg<br>120mg                            | I.V | 4  |
| 8.  | Irinotecan     | 110mg                                     | I.V | 4  |
| 9.  | Leucovorin     | 350mg                                     | I.V | 2  |
| 10. | Oxaliplatin    | 100mg<br>150mg<br>180mg<br>190mg<br>200mg | I.V | 12 |
| 11. | Paclitaxel     | 150mg<br>230mg<br>260mg<br>270mg          | I.V | 12 |
| 12. | Pemetrexed     | 500mg                                     | I.V | 2  |
| 13. | Prednisolone   | 5mg                                       | P.O | 2  |
| 14. | Rituximab      | 550mg                                     | I.V | 2  |
| 15. | Vincristine    | 2mg                                       | I.V | 2  |
| 16. | 5 Fluorouracil | 4600mg<br>700mg                           | I.V | 2  |

#### Frequency of cytotoxic drugs administration

**Table 10: Cytotoxic drugs frequency of administration and route of administration.**

| S. No | Drug             | Route | Frequency                                 |
|-------|------------------|-------|---|
| 1.    | Gemcitabine      | IV    | 1000 mg in 250 ml NS over 30 mins         |
| 2.    | Carboplatin      | IV    | 300 mg in 500 ml 5% Dextrose over 2 hours |
| 3.    | Paclitaxel       | IV    | 230 mg in 500 ml NS over 3 hours          |
| 4.    | Docetaxel        | IV    | 60 mg in 500 ml NS over 1 hour            |
| 5.    | Oxaliplatin      | IV    | 150 mg in 500 ml 5% Dextrose over 2 hours |
| 6.    | Leucovorin       | IV    | 200 mg in 500 ml NS over 2 hours          |
| 7.    | 5-Fluoro Uracil  | IV    | 500 mg in 1 liter NS over 22 hours        |
| 8.    | Cisplatin        | IV    | 40 mg in 500 ml NS over 1 hour            |
| 9.    | Adriamycin       | IV    | 80 mg in 100 ml NS over 15 mins           |
| 10.   | Cyclophosphamide | IV    | 770 mg in 250 ml NS over 1 hour           |
| 11.   | Irinotecan       | IV    | 110 mg in 500 ml NS over 2 hours          |
| 12.   | Pemetrexed       | IV    | 500 mg in 100 ml NS over 30 mins          |
| 13.   | Etoposide        | IV    | 130 mg in 500 ml NS over 1 hour           |
| 14.   | Ifosfamide       | IV    | 120 mg in 1000 ml NS over 24 hours        |

**Type concomitant drugs used and number of prescriptions found****Fig 2: Number of concomitant drugs found in prescriptions.****DISCUSSIONS**

In this study among 80 patients most of the cancers are seen in females than males in the age group of 51-60 mostly. In females the breast and cervical cancers are more and in male's bladder and stomach cancers are more. For every type of cancer cytotoxic drugs are used. For bladder cancer drugs like gemcitabine, carboplatin is used. For breast cancer drugs like Adriamycin, cyclophosphamide and paclitaxel are used. For cervical cancer platinum-based drugs like cisplatin and carboplatin used and paclitaxel also used. For colon cancer and sigmoid colon cancer oxaliplatin and capecitabine are used. For endometrium cancer paclitaxel, and platinum-based drugs like carboplatin, and cisplatin drugs are used. For esophageal cancer irinotecan is used. For jaw adenocarcinoma docetaxel, cisplatin and 5 fluorouracil are used. For liver cancer gemcitabine and cisplatin are used. For lung cancer docetaxel, pemetrexed and carboplatin are used. For lymphoma Adriamycin, cyclophosphamide, and vincristine are used. For nasal cancer cisplatin is used. For ovary cancer platinum drugs like carboplatin, cisplatin is used and also paclitaxel, and etoposide are also used. For prostate docetaxel and to rectum cancer oxaliplatin are used. And for stomach cancer oxaliplatin and irinotecan are used for chemotherapy of various types of cancer. Different classes of drugs are used for different types of cancer based on their target suitability. Based on the type of cancer, stage, complications the anti-neoplastic drugs are used in chemotherapy is given either in single drug (monotherapy) or combination of drugs (combination therapy like monotherapy, dual therapy, and triple therapy). In the chemotherapy of breast cancer adriamycin is used in both monotherapy and in combination with cyclophosphamide and paclitaxel. In cervical cancer platinum drug cisplatin is used in alone and in combination paclitaxel and carboplatin are used. In stomach cancer oxaliplatin or irinotecan are used and these two drugs are also used in combination of dual therapy where as in combination therapy 5fluorouracil, leucovorin, oxaliplatin and docetaxel are used in combination therapy. In ovary cancer no monotherapy is used but in combination platinum-based drug is used in combination with paclitaxel or with etoposide.

In endometrium cancer same drugs used in cervical cancer are used as it is. In prostate docetaxel is used and in bladder cancer combination of carboplatin and gemcitabine is used. In jaw cancer docetaxel, cisplatin and 5fluorouracil is used as triple therapy. In bladder cancer only the dual therapy combination of gemcitabine and carboplatin is used. In colon and sigmoid colon, the only the dual therapy combination of oxaliplatin and cisplatin is used. In liver cancer gemcitabine and cisplatin combination is used. In lung cancer docetaxel is used in monotherapy and pemetrexed and carboplatin is used as combination therapy. In lymphoma a multiple

combination of rituximab, adriamycin, cyclophosphamide and vincristine are used. Patients receiving single drug-based chemotherapy (mono therapy) are more (50%), double drug regimen-based chemotherapy (dual therapy) is 43.7%, triple drug-based regimens are 1.25% and multiple therapy are 5%. In In mono therapy cytotoxic drugs are used alone like cisplatin, oxaliplatin, irinotecan, Adriamycin, docetaxel, paclitaxel. Where as in dual therapy the combination of two drugs are used like Adriamycin & cyclophosphamide, cisplatin & gemcitabine, paclitaxel & carboplatin, docetaxel & cyclophosphamide, docetaxel & prednisolone, pemetrexed & carboplatin, etoposide & carboplatin, and gemcitabine & carboplatin.

In multiple therapy the combination of 5fluorouracil, leucovorin, oxaliplatin and docetaxel are used and also rituximab, Adriamycin, cyclophosphamide and vincristine is used. All the cytotoxic drugs used in the chemotherapy are used in different doses as mentioned in table 7 based on severity and patient demographic details. And also, majority of drugs are given in intravenous route. Majorly platinum based drugs are used in chemotherapy. In this study every anti-neoplastic drug used in the chemotherapy are given in the intravenous route in dilution form even in a normal saline solution or and in a 5% dextrose solution. And all cytotoxic drugs are given in intravenous route only in a controlled manner with in physician prescribed over time.

The drugs like ondansetron, dexamethasone, chlorpheniramine maleate, ranitidine, hydrocortisone, pantoprazole, metoclopramide, aprepitant, olanzapine, capecitabine, atropine, promethazine, filgrastim, paracetamol, prednisolone, and vitamin B12 are used as the concomitant drugs to treat or to suppress the side effects caused by the major cytotoxic drug used in the chemotherapy. All these concomitant drugs are either given in intravenous route during the chemotherapy cycle and also give orally after completion of the chemotherapy and filgrastim is given subcutaneously after completion of chemotherapy for five days as a supportive care treatment.

## CONCLUSION

This study provides valuable insights into the prescription patterns and therapeutic approaches for various types of cancer chemotherapy in a tertiary care hospital. The findings indicate that cancer predominantly affects females, with the highest prevalence in the 51-60 age group. Cervical and breast cancers were the most commonly diagnosed among females, while prostate and bladder cancers were more frequent in males. Chemotherapy remains the primary treatment modality, with platinum-based drugs such as cisplatin, carboplatin, and oxaliplatin being the most commonly prescribed cytotoxic agents. These drugs were administered either as monotherapy or in combination with other cytotoxic drugs to enhance therapeutic efficacy. The majority of cytotoxic drugs were given intravenously in a diluted form with normal saline or 5% dextrose. Supportive medications, including antiemetics, corticosteroids, and proton pump inhibitors, were co-administered to mitigate chemotherapy-induced adverse effects. The study highlights the importance of individualized treatment regimens, considering patient-specific factors such as cancer type, disease severity, and response to therapy. A significant portion of patients received monotherapy (50%), while others underwent dual-therapy (43.75%) or more complex combination regimens. The administration of chemotherapy followed standard protocols, with cycles spaced at three-week intervals to allow for patient recovery and minimize toxicity. Overall, this research underscores the necessity of rational drug prescription and adherence to evidence-based chemotherapy protocols to improve treatment outcomes and patient survival rates. Further studies with larger sample sizes and longer follow-up periods are recommended to evaluate the long-term effectiveness and safety of chemotherapeutic regimens.

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