# A Study on the Declining Nutritional Status and Quality of Life in Breast Cancer Patients Undergoing Chemotherapy with Cisplatin Drug

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**ABSTRACT** *The present study attempts to evaluate the declining nutritional status and quality of life in patients with breast cancer diagnosis undergoing chemotherapy with cisplatin drug. This study consists of two groups, control group includes normal subjects free from diseases and experimental group includes breast cancer subjects undergoing chemotherapy with the drug cisplatin. Dietary behavior and anthropometric indices were assessed in each subject before the commencement of the treatment and at the end of the three consecutive cycles. The study revealed that there was a significant decline in the nutrient intake (energy, carbohydrate, protein and fat), body mass index and the quality of life as well between the cycles of chemotherapy.*

## INTRODUCTION:

Cancer is a disease that has been known since ancient times. The word cancer refers to any uncontrolled growth of abnormal cells. Cancer prevalence in India is estimated to be around 2.5 million, with over 8,00,000 new cases and 5,50,000 deaths occurring each year due to this disease. More than 70% of the cases report for diagnostic and treatment services in the advanced stages of the disease, which has lead to a poor survival and high mortality rate (Chobanian, 2008).

Cancer can affect any site in the body and about one hundred human cancers are recognized. Kobayashi, 2004 opines that there is a marked variation among gender in the incidence of different cancers. Among men, lung, esophagus, stomach, oral and pharyngeal cancers are more prevalent, while in women, cancers of cervix and breast are most common, followed by those of stomach and esophagus. A trend analysis of the data on cancer incidence for the period 1998-2008 has demonstrated that the overall occurrence of cancer is increasing among females. The greatest increase among females was for cancer of the breast and among males for cancer of the prostate.

The incidence of breast cancer in India is on the rise and is rapidly becoming the number one cancer in females pushing the cervical cancer to the second spot. The seriousness of the situation is apparent after going through recent data from Indian Council of Medical Research (ICMR), 2008. It is reported that one in twenty two women in India are likely to suffer from breast cancer during their lifetime.

Chemotherapy destroys cancer cells because the medicines target rapidly dividing cells. But as normal cells in the blood, mouth, intestinal tract, nose, nails, vagina, and hair also divide rapidly, chemotherapy affects them, too (Kaufman et al, 2005). The side effect of chemotherapy depends on the regimen given to the patients, the amount of medicine, the length of treatment, and general health. The side effects may be different from individual to individual who is on the same regimen.

Kaufman et al, 2007 reported that taste changes are common during chemotherapy. The exact reason for taste changes is not clear, although it is thought that it is a result of the damage to the cells in the oral cavity, which are especially sensitive to chemotherapy. About 50 percentages of patients getting chemotherapy experience taste changes. Drugs most commonly associated with taste changes include carboplatin, cisplatin, cyclophosphamide, dacarbazine, dactinomycin, doxorubicin, 5- flurouracil, levamisole, mechlorethamine, methotrexate, paclitaxel and vincristine.

Chemotherapy losses sense of taste that can occur purely from the association of an experience of nausea and vomiting with chemotherapy. Taste changes may occur during therapy and lasts for hours, days, weeks, or even months after chemotherapy. When food has no flavor, it can be mentally difficult to chew and swallow. After a few days the person may feel impossible not to focus on the consistency or texture of foods, but may find repulsive without flavor. This can lead to an aversion to certain foods or eating altogether, which can ultimately result in weight loss and malnourishment (Lagergren et al, 2004).

## NEED FOR THE STUDY:

Malnutrition and weight loss are common in patients with cancer, both factors could potentially affect the response and tolerance to treatment, decrease quality of life (QOL), and associate with poor survival. Modifications in smell or taste senses could play a significant role in the etiology of anorexia in cancer patients. Taste disorders may affect food selection and contribute to poor meal intake and low quality of life. (Schiffman et al, 2007).Taste disorders are common in patients with cancer under chemotherapy. Chemotherapeutic drugs associated with taste changes include cisplatin, carboplatin, cyclophosphamide, doxorubicin, 5-flourouracil, and methotrexate. Chemotherapy drugs could affect other rapidly growing cells such as the taste receptors. A variety of circulating drugs that permeate into saliva and diffused from blood to taste receptors resulting in a phenomenon called venous taste change.

Several studies have reported on the adverse effect and the signs and symptoms associated with chemotherapy. This study evaluates the dietary behavior in patients with breast cancer diagnosis undergoing chemotherapy with cisplatin before and after 1st, 2nd and 3rd cycle to determine differences in nutrient intake and the body mass index.

## GENERAL OBJECTIVES:
- To select subjects free from any diseases, as control group.
- To select breast cancer patients on treatment with cisplatin drug, as experimental group.
- To assess and compare the dietary pattern and nutritional anthropometry of the control group and the experi-

mental group before the first cycle and at the end of all the three consecutive cycles of chemotherapy

**Method of data collection -**
Data was collected at regular intervals. Samples were selected based on the drug log sheet, keeping in mind their stage of cancer, drug used to treat them and the cycle of chemotherapy they were admitted for. Before the commencement of the first cycle of chemotherapy and after the three consecutive cycles, patients height, weight and the dietary pattern were collected.

**RESULTS AND DISCUSSIONS:**
On comparing the efficacy of cisplatin on the dietary pattern and on the anthropometric indices, from each subject before the commencement of the treatment and at the end of the three consecutive cycles, the following results were obtained:

**TABLE 1: COMPARISON ON THE EFFECT OF CISPLATIN GROUP OVER THE CONTROL GROUP ON THE NUTRIENT INTAKE OF ENERGY, CAEBOHYDRATE, PROTEIN AND FAT**

| Nutrients | Cisplatin Mean ± Standard deviation | Control Mean ± Standard deviation | 't' value | Level of significance |
|---|---|---|---|---|
| Energy (kilocalories) | 2522.50 ± 301.11 | 2079.10 ± 338.57 | 3.09 | p < 0.01 |
| Carbohydrate (grams) | 332.80 ± 36.07 | 327.20 ± 39.79 | 0.33 | Not significant |
| Protein (grams) | 64.20 ± 5.90 | 61.00 ± 7.43 | 1.06 | Not significant |
| Fat (grams) | 25.10 ± 4.48 | 23.50 ± 3.06 | 0.93 | Not significant |

From table 1, it was observed that there was no significant difference in the nutrient intake of carbohydrate, protein and fat with the 't' value 0.33, 1.06 and 0.93 respectively, but the energy intake between the cisplatin group and control group was significant at 1 percent level with the 't' value 3.09.

**Figure 1: Effect of cisplatin on the nutrient intake before the commencement and between the three cycles of chemotherapy**
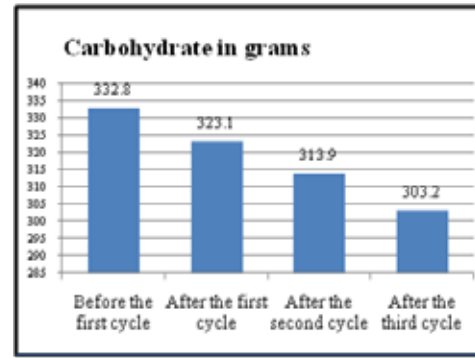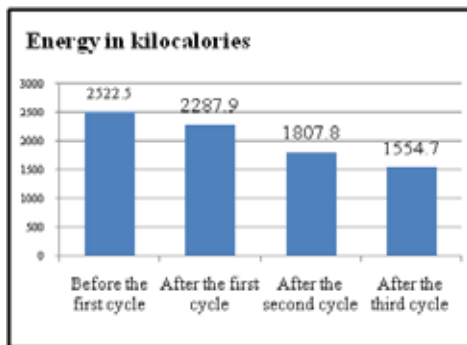


From figure 1, it was observed that there was a significant decrease in the mean value of both energy and carbohydrate intake and no significant difference in the protein and fat intake before the first cycle and after the first cycle but a significant difference at 1 percent level was observed in both protein and fat between the first cycle and the second cycle and also after the second cycle.

On comparing the effect of cisplatin group over the control group on the body mass index, it was observed that there was no significant difference in the body mass index between the cisplatin group and control group, with the 't' value 1.04

**TABLE 2: EFFECT OF CISPLATIN ON THE BMI BEFORE THE COMMENCEMENT AND BETWEEN THE THREE CYCLES OF CHEMOTHERAPY**

| Period | Body Mass Index ( kilograms / meter2) Mean ± Standard deviation | 't' value | Level of significance |
|---|---|---|---|
| Before the first cycle | 24.58 ± 2.46 | 2.79 | p < 0.05 |
| After the first cycle | 24.47 ± 2.30 | | |
| After the second cycle | 23.90 ± 2.26 | 8.79 | p < 0.01 |
| After the third cycle | 23.49 ± 2.32 | 3.92 | p < 0.01 |

From table 2 it was observed that there was a significant decrease in the body mass index before the first cycle and after the first cycle, with the 't' value 2.79, at a significant level of 5 percent. A significant difference at 1 percent level was observed in the body mass index between the first and the second cycle and also between the second and the third cycle with the 't' value 8.79 and 3.92 respectively.

**CONCLUSION:**
Chemotherapy by itself has many side effects such as anemia/low red blood cell counts, diarrhea, fatigue, fertility issues, hair changes, infection, memory loss, menopause and menopausal symptoms, mouth and throat sores, nail changes, nausea, neuropathy (problems with hands and feet), taste and smell changes, vaginal dryness, vomiting, and weight changes. In spite of these side effects, certain chemotherapeutic drugs cause nutritional deficiencies which makes the condition of the patient even worse.

As a nutritionist it is our duty to overcome malnutrition and weight losses which are common in patients with cancer that could potentially affect the response and tolerance to treatment, decrease quality of life (QOL), and associate with poor survival.

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