Introduction:

Cancer is a leading cause of death worldwide and accounted for 7.6 million deaths (around 13% of all deaths) in 2008. The number of cases and annual deaths from cancer by 2035 is expected to be 23.9 and 14.6 million, respectively, representing an increase of 69.5% in the number of cases, and 78% in the number of deaths compared to 2012 [41]. According to GLOBOCAN 2012 data, in 2012 there were 10,14,934 new cancer cases in India in both men and women, 6,82,830 deaths and 17,90,498 people living with cancer (within 5 years of diagnosis) . Cancers that affect Indian population are Breast, Cervical, Oral, lung and colorectal, Gall Bladder, uterus, prostate cancers.

Presently in India, it is a major cause of morbidity and mortality. Many cancers are preventable by controlling the modifiable risk factors such as tobacco use, alcohol use, unhealthy diet and physical inactivity, amongst others. In addition, a significant proportion of cancers can be cured, by surgery, radiotherapy or chemotherapy, especially if they are detected early.

Statistics:

One woman dies of cervical cancer every 8 minutes in India [26]. For every 2 women newly diagnosed with breast cancer, one woman dies of it in India [41,40,45].

Cancer Statistics in India [28]:

- Estimated number of people living with the disease: around 2.5 million
- Every year, new cancer patients registered: Over 7 lakh
- Cancer-related deaths: 5,56,400

Deaths in the age group between 30-69 years [37]:

- Total: 3,95,400 (71% of all cancer related deaths). Men: 2,00,100. Women: 1,95,300

Cancers of oral cavity and lungs in males and cervix and breast in females account for over 50% of all cancer deaths in India [12]. The top five cancers in men and women account for 47.2% of all cancers; these cancers can be prevented, screened for and/or detected early and treated at an early stage [44].

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This could significantly reduce the death rate from these cancers.

	Men	Women
1	LIP,ORAL CAVITY	BREAST
2	LUNG	CERVIX
3	STOMACH	COLORECTUM
4	COLORECTUM	OVARY
5	PHARYNX	LIP,ORAL CAVITY

Cervical Cancer:

Cervical cancer is the second most common cancer in India in women accounting for 22.86% of all cancer cases in women and 12% of all cancer cases in both men and women [16].

More women in India die from cervical cancer than in any other country.

Globocan 2012 data [40,41]:

- **New cases registered**: 1,23,000
- **Deaths**: 67,500
- **Median age**: 38 years (age 21–67 years).

Rural women are at higher risk of developing cervical cancer as compared to their urban counterparts [16]. Cervical cancer is less common in Muslim than in Hindu women [37]. Cervical cancer is the third largest cause of cancer mortality in India accounting for nearly 10% of all cancer related deaths in the country [29].

Survival rate:

The relative five year survival averages to 48.7% [7]. Length of survival depends on the cancer stage at the time of diagnosis. The survival chance of a person becomes better if the cervical cancer is diagnosed and treated at earlier stages. Therefore it is important to avail of cervical cancer screening.

Breast Cancer:

Breast cancer is the most common cancer in women in India and accounts for 27%

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of all cancers in women [40,41].

Globocan 2012 data:

- **New cases registered**: 1,44,937
- **Deaths**: 70,218

The incidence rates in India begin to rise in the early thirties and peak at ages 50-64 years [12]. Overall, 1 in 28 women is likely to develop breast cancer during her lifetime. In urban areas, 1 in 22 women develops breast cancer during her lifetime as compared to rural areas where 1 in 60 women develops breast cancer in her lifetime [43].

Oral Cancer:

Oral cancer is the most common cancer in India amongst men (11.28% of all cancers), fifth most frequently occurring cancer amongst women (4.3% of all cancers) and the third most frequently occurring cancer in India amongst both men and women [40,41].

Globocan 2012 data:

- **New cases registered**: 77,003
- **Deaths**: 52,067

Around 80% of oral cancers are directly attributable to tobacco use [42]. The mean age of oral cancer is 50 years [38]. The rates for oral cancer among males are significantly higher than females and these rates increase with age.

Survival rate (5-year) [12]

Patients with early stage oral cancer: 82%. Patients with advanced stages: 27%.

All over the globe the occurrence of these diseases is growing due to which mortality rate is also increasing as there is no actual cure for this disease still invented only treatment are possible which extends the life span of these patients. Various treatments available are chemo therapy, radiation therapy, Tomo Therapy, Surgery. Different treatment has its own complications and side effects. Patients undergoing treatment experience a multitude of symptoms, including fatigue, pain,

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difficulty breathing, nausea, appetite loss, and unintentional weight change (14,24,30). These symptoms can negatively impact one's ability to complete treatment as well as one's quality of life during and after treatment (8,12,15,17,22,25).

Patients undergoing cancer treatment experience a multitude of symptoms that can influence their ability to complete treatment as well as their quality of life during and after treatment. Cancer treatment may affect one's diet, and dietary changes can exacerbate other treatment related symptoms. Cancer patients who experience chemosensory alterations, distorted taste, and increased sensitivity to smells due to the cancer itself or as a side effect of treatment (9,18) are more likely to report higher levels of weight loss, lower energy intake, and worse quality of life (18,19,23,33,34). Dietary interventions, such as dietary counseling, flavor enhancement, oral supplementation, or tube feeding, have been found to lessen weight loss and improve health status (20,21,25,27,32).

The incidence of malnutrition amongst patients with cancer has been estimated at between 40 and 80% (1,6). The prevalence of malnutrition depends on the tumour type, location, stage and treatment (5). The consequences of malnutrition may include an increased risk of complications, decreased response and tolerance to treatment, a lower quality of life, reduced survival and higher health-care costs (2,4,10). The comprehensive approach to nutrition support may lead to improvements in nutritional status, quality of life, patient satisfaction and treatment outcomes (3).

Most of the research exploring the relationship between diet and health status/quality of life during cancer treatment has focused on specific subgroups, such as patients with advanced cancer (23) or patients with head and neck cancers (25,31,35), and include smaller sample sizes (31). However, a recent study of 1453 outpatients suggests that a broader range of patients are at nutritional risk during cancer treatment (36). Despite this, nutritional screenings are not routinely conducted with cancer patients.

There is a need to better understand the relationship between treatment and weight change and it's co-relate with food intake and complications. Hence in order to know the health status of Chemo therapy patient following Project Entitled "Effect of Chemotherapy on Health Status: A Clinico- Epidemiological Study in a Tertiary Care Center in India. "is undertaken with following Objectives

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1. To know the degree of change of weight of the patient
2. To know the symptoms and complications of patients
3. To co-relate with food intake and weight loss.

Materials and Methods:

Sample size: A sample of 50 numbers was collected for the study.

Sampling technique: Random sampling method was selected for the purpose of the study

Study periods: 1 month (May) was selected for this study.

Sampling site: Tertiary Care Centre in India

Inclusion criteria

- Patient undergoing for only chemotherapy
- Patients who were able to talk
- Only Patient who came to Apollo hospital for chemotherapy

Exclusion criteria

- Seriously ill patients
- Patients having multiple health problems
- Patients undergoing other than chemotherapy.

Data collection tools

As data collection tool “Score Patient-Geerated Subjective Global assessment (PG-SGA)” was selected. And 24 Hour Dietary Recall method was used to check food intake.

Patient were asked about their complications, functionality, current weight and one to six month of weight and also checked for steroids taken based on PG SGA * then the data was scored and analyzed. Results drawn from the following findings are

Results and Discussion

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Gender, Age:

We found more female as compared to male suffered with cancer. The mean age group was found 63.25± 18.17.

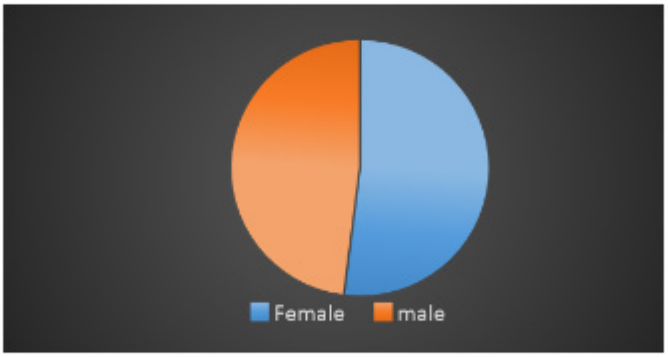


Fig4.1: Gender distribution of chemotherapy patients

Various Complications Suffered By Chemo:

Among all the complications, pain in any part of the body was found to be Highest followed by dry mouth as second major prob. The third major problems are swallowing and vomiting followed by nausea and fatigue at 4th position. While diarrhea was found only in 4% of patients. In addition to that, other contributed associated health issues constipation, quickly fullness, hair fall etc.

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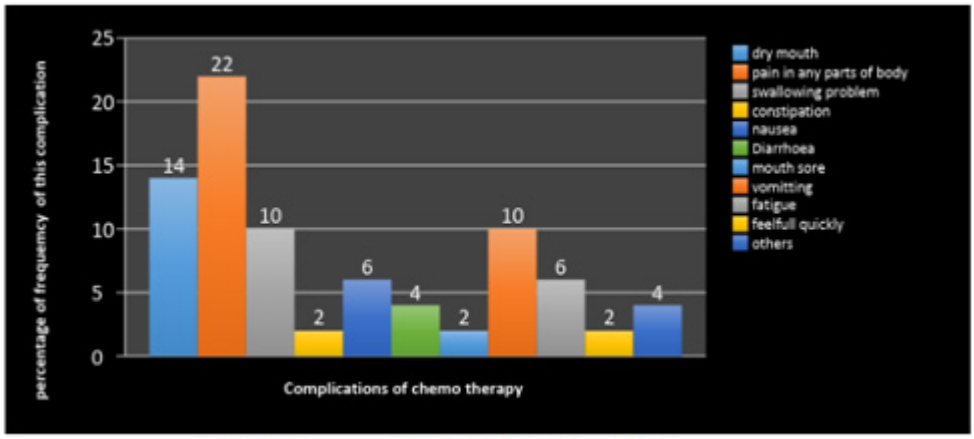


Fig4.2 Various complication Suffered by patients

Food Intake by Patients:

Food intake became low during chemo due to various reason in maximum patients. 68% patients was consuming less than normal food. While only 10% was consuming more than normal.

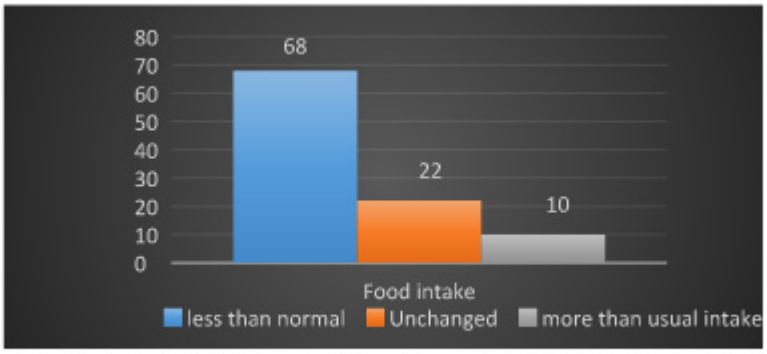


Fig4.3: Categorization of food intake in terms of percentage

Weight Change Profile:

A comparison current weight, weight before one month and weight before six months of chemotherapy patients showed in the table 4.2 Conclude a decreased in weight from six months till current weight.

Table 4.2: comparison of mean current weight, mean one month before weight and mean six month before weight

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Mean of current weight	Mean of one month before weight	Mean of six month before weight
63.13±18.5	65.2±18.1	66.67±18.2

Pearson test was done to see correlation between food intake and weight and sign and symptoms and it showed negative correlation. Hence food intake increases, weight loss decreases and so as the symptoms also decreases.

Physical Status:

In spite of chemotherapy 62 % of patient had to able to be up and about fairly normal activity while 22% of them spend less half of day in bed or chair followed by 6% of them could do little activity and spend most of day in bed or chair .Only 4% of them were bed ridden rarely out of the bed due to physical weakness.

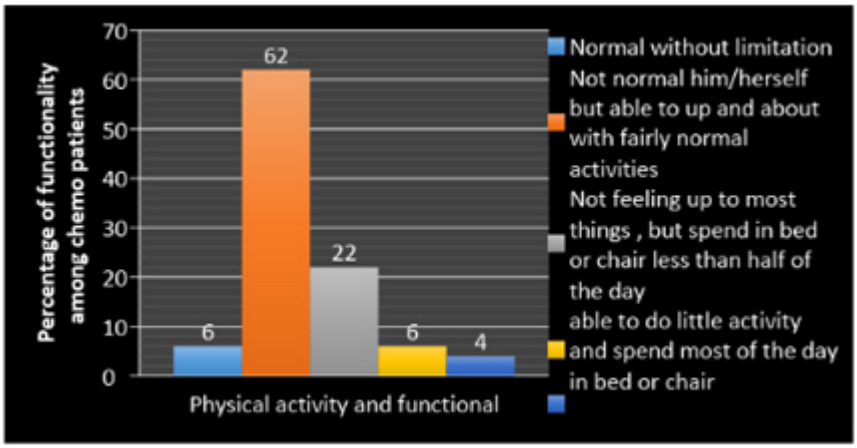


Fig4.4: percentage of physical activity and functionality among Chemotherapy patient categorized according to PG-SGA tool

Grading of health status:

Health status was graded based on the PG SGA scoring. Scoring shows 64% fell under Grade B either due to weight loss <5% in one or six months or due to moderate functional deficit or due to decrease in food intake while 26% fell into grade A as either there was no weight loss or weight gain and no physical deficit and only 10% fell into Grade C either due to severe weight loss or severe decrease in food intake.

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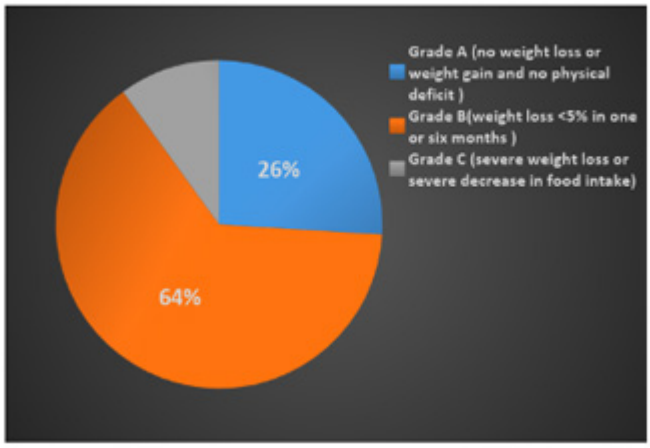


Fig4.5: percentage of health status according to PG-SGA tool

Conclusion:

Chemo therapy is aggressive form of cancer treatment, which results in various complications like sore throat, diarrhea, vomiting, pain, and altered sense of taste. Overall study showed significant weight loss during chemotherapy whether can be due to altered taste, low appetite, vomiting or any complication. A correlation Pearson test was done to see correlation between food intake and weight and sign and symptoms it showed if food intake increases, weight loss decreases and so as the symptoms also decreases. Hence patient should be encouraged to eat as they get demotivate as chemo process start and also to overcome the complications. Nutritional management is also very important. Patient's food should be well modified to suit its current conditions. High protein and calorie diet should be provided with early Nutrition supplementation if intake is not up to the mark though modified diet. However modification should be not only in terms of calories, protein and fat and micro nutrients but also in consistency (puree form), palpability, and flavor and in plate presentation with many variations.

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