

# Nutritional Intervention and the Need of Diet Counselling in Oncology Patients

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**Abstract:** ***Introduction:** Nutrition and diet counselling have a key role in the management of cancer patients because there are strong evidences that the main cause for all cancer deaths is related to diet. It has been noticed that cancer cachexia which is a specific form of cancer associated malnutrition occurs in (80%) of the patients and is responsible for (20%) of cancer related deaths. Cancer patients experience malnutrition, significant weight loss due to decreased food intake, anorexia, vomiting, diarrhea, constipation, mucositis, dysphagia and pain due to cancer treatment related side effects thereby affecting overall quality of life. Dietary modification is necessary to reduce or eliminate these side effects. Nutritional intervention should be actively managed and provided for each patient throughout the course of treatment. **Aim:** The objective of this study is to create awareness about the importance of dietary counselling and provide timely nutritional intervention to cancer patients. **Materials and Methods:** A randomized study was carried out on sample size of 50 patients aged 18 years and above in the Medical Oncology Department. The data was collected through a questionnaire cum interview method. Anthropometric measurements, laboratory parameters and a malnutrition screening tool (MST) were used to identify patients at nutrition risk and to assess the nutritional status. **Results:** Majority (98%) of the patients were not counselled about their diet and did not follow any specific dietary guidelines. The factors leading to weight loss during treatment were loss of appetite experienced by (56%), vomiting (18%), vomiting and loss of appetite (18%) and diarrhea and malabsorption expressed by (4%) each. Therapy durations had an impact on the nutritional state and most of the patients found it difficult to cope up with their nutritional needs. All the patients wanted knowledge about healthy dietary habits and were of the opinion that lifestyle behaviors could improve the quality and quantity of life. After using the malnutrition screening tool (MST) it was found that majority i.e. (88%) of the patients were at the risk of malnutrition. **Conclusions:** It was observed that the respondents were ignorant and lacked knowledge about the benefits of nutritional therapy during and after cancer treatment. Thus, it is very important to counsel these patients about consuming a healthful plant-based diet high in fruits and vegetables, unrefined whole grains and promote the importance of weight maintenance. A malnutrition screening tool should also be made compulsory to identify patients at risk.*

**Keywords:** Nutritional Intervention, Diet Counselling, Oncology patients

## 1. Introduction

Quoting statistics from the 2014 World Cancer Report, it is striking to note that populations across developed and developing nations have succumbed to cancer. [1]

Cancer rates are likely to be more than double by the year 2030. Projected increases are due to several factors:

- 4 in 10 cancer cases are linked to lifestyle factors.
- Smoking is the largest cause of cancer each year—approximately 1 in 5 of all cancers are caused by smoking.
- Diet is second largest cause of cancer each year—approximately 1 in 10 of all cancer causes are linked to diet. [2]

Only 5-10% of all cancers seem to be attributed to genetic defects and remaining over 90% depends upon environment and lifestyles, which include smoking, diet (fried foods, red meat), alcohol intake, sun exposure, environmental pollutants, infections, stress, obesity and physical inactivity. [3]. It has been seen that lifestyle factors such as diet and physical activity make a difference not only in preventing the primary risk for cancer but also improving the quality of life. Evidence also suggest that nutritional status may also influence the course of disease and affect cancer progression. [4].

Cancer patients usually suffer from malnutrition which leads to adverse effects on survival, prolonged hospitalization, a higher degree of treatment-related toxicity, reduced response to cancer treatment, affects quality of life and a worse overall prognosis. [5].

Cancer cachexia, a specific form of cancer associated

malnutrition is the main cause of increased mortality and morbidity at the advanced stages of cancer. [1]. It occurs in 80% of patients and accounts to 20% of cancer related deaths. Cancer therapies, including surgery, chemotherapy, and radiation, are also associated with malnutrition. Anti-cancer drugs often result in vomiting, mucositis, diarrhoea, and dysphagia. [6].

Modifications in diet and eating habits may be necessary during treatment to reduce or eliminate side effects of therapy. Weight maintenance is strongly recommended during therapy with weight gain or loss being regularly monitored. [7]. Several studies have demonstrated that patients with cancer who stabilised their weight had longer survival and improved quality of life compared with those who continued to lose weight. [8].

Dietary counselling and nutrition intervention among these patients and during the time of treatment has been shown to improve outcomes. [4].

Nutrition intervention has an important role in cancer survivors. The first nutrition guidelines that specifically addressed cancer survivors were established by the American Cancer Society (ACS) in 2003 and were updated three years later. Early detection and latest medical treatment have greatly increased the number of cancer survivors. [4]

The implementation of both screening and assessment tools is essential for effective nutritional intervention and management of cancer patients. The aim of early nutritional screening and assessment are crucial in patients for preventing or minimising the development of malnutrition at

all stages of treatment. Nutritional screening tools such as the Nutritional Risk Screening 2002 (NRS 2002), the Malnutrition Universal Screening Tool (MUST), the Malnutrition Screening Tool (MST), Patient Generated Subjective Global Assessment (PG-SGA) and the Mini Nutritional Assessment (MNA) help in identifying patients at nutritional risk so that they benefit from nutritional support. [5].

Since the cancer survivors are at increased risk for chronic diseases (mainly second cancers and CVD), so prudent diets like unrefined plant foods such as fruits, vegetables, whole grains, protein rich foods and healthy fats like monosaturated and polyunsaturated fats should be the choice for these cancer survivors. These diets also reduce the risk for diabetes, heart disease and hypertension.

Cancer survivors who adopt healthier lifestyle like regular physical exercise, diet low in fat and calories and high fibre have better quality of life and survival than those cancer survivors who perform less physical activity and an unhealthy diet. [4].

Overall nutritional implementation involves counselling the patient and/or carers to maximise food intake and facilitate optimal symptom control. Counselling especially in conjunction with high-protein energy supplements, has been shown to increase intake and attenuate weight loss in range of cancer patients. Though, consumption of high protein energy supplements may reduce meal intake, but in cancer patient's high energy supplements has shown no negative impact.

Nutrition counselling is effective during phases of both active treatment (chemotherapy and radiotherapy) and supportive care. Recent studies in cancer patients have demonstrated effective clinical outcomes with weekly or fortnightly nutrition intervention. [8].

### Objectives

- 1) To provide timely nutritional intervention to oncology patients
- 2) To create awareness about the importance of dietary counselling in oncology patients
- 3) To promote the importance of weight management and healthful plant-based diet (low in saturated fats and simple sugars and high in fruits, vegetables and whole grains)

## 2. Review of Literature

Teong and Lee (2016) highlighted the role of nutritional intervention in cancer patients. Malnutrition and weight loss are common and potentially lethal conditions in cancer patients. It is important to identify cancer patients at risk to minimize weight loss and prevent cancer cachexia development. Cancer cachexia is a multiorgan syndrome associated with multiple metabolic aberrations. Cancer treatment including surgical and chemo-radiotherapy may contribute to complications such as anorexia, dysphagia and mucositis leading to poor nutrient intake. Previous studies have shown that nutritional intervention is recommended for better survival, shortened hospital stay, and improved quality

of life. [1].

A study was carried by Riccardo *et al.* (2016) on "Nutritional Support in Cancer Patients: A Position Paper from the Italian Society of Medical Oncology (AIOM) and the Italian Society of Artificial Nutrition and Metabolism (SINPE)". Evidence from the literature suggests that nutritional screening should be performed using validated tools (the Nutritional Risk Screening 2002 [NRS 2002], the Malnutrition Universal Screening Tool [MUST], the Malnutrition Screening Tool [MST] and the Mini Nutritional Assessment [MNA] ), both at diagnosis and at regular time points during the course of disease according to tumour type, stage and treatment. Patients at nutritional risk should be referred for comprehensive nutritional assessment and support to the clinical nutrition services specifically for cancer patients. Nutritional intervention should be actively managed and targeted for each patient; it should comprise personalized dietary counselling and/or artificial nutrition according to spontaneous food intake, tolerance and effectiveness. [5].

Isernget.al (2004) determined the effect of early and intensive nutrition intervention on body weight, body composition, nutritional status, quality of life and physical function compared to usual practice in oncology outpatients undergoing radiotherapy to the gastrointestinal or head and neck area. A total of 60 patients (51M: 9F, mean age 61.9+/-14.0 years) were randomised to receive either nutrition intervention (NI) (n=29) or usual care (UC) (N=31). The NI group had statistically small deteriorations in weight (P<0.001), nutrition status (P=0.020) and quality of life (P=0.009) compared to those receiving UC. Early and intensive nutrition intervention appears beneficial in minimising weight loss, deterioration in nutrition status and physical functioning in oncology patients receiving radiotherapy to gastrointestinal or head and neck area. Weight maintenance in this population leads to beneficial outcomes. [9].

## 3. Methodology

This 6-month randomized study was carried out on a sample size of 50 patients aged 18 years and above in the Medical Oncology Department of Skims, Soura. Diet history, physical examination, anthropometric measurements like body weight, height, BMI and skin fold thickness and laboratory lists were used to check the nutritional status of the cancer patients. The data was collected through a questionnaire cum interview method.

A nutritional screening tool was also used to quickly identify malnourished patients. MST (Malnutrition Screening Tool) included two questions related to weight loss and appetite. The patient's answers were scored. A score of  $\geq 2$  was considered at the risk for malnutrition, where as a score of 0 or 1 was not considered malnourished.

A diet chart was provided to the cancer patients during. Protein supplements were also recommended to the patients. Patients were asked to provide 24-hour dietary recall for complete nutritional assessment.

Nutritional counselling was provided to every patient

during study visits. The patients were advised to follow the diet. History and food intake, change in body weight and problems with food intake were assessed. Relevant medical history aspects (diagnosis: medical therapy, blood parameters, drugs and symptoms such as nausea, vomiting and dysphagia), fluid intake and change of body weight over time were also taken into account. Dietary advice was adjusted according to patient's food habits and preferences. During each study visit, the patient's adherence to the diet was assessed. Dietary counselling was provided by face-to-face interviews and at the time of scheduled follow up visits (2 weeks, 3 month and 6 months) as well as by telephone interview during study period. Depending on the physical status of the patients, low levels of physical activity (walking and/or climbing stairs) and participation in household activities were also encouraged during counselling sessions.

#### 4. Results and Discussion

The present topic relates to the nutritional intervention and the role of diet counselling in oncology patients which requires a thorough survey regarding the responsiveness of the patients and society at large. As such the present topic is directed towards creating awareness about the importance of diet counselling and using a nutritional approach in oncology patients. The survey was a randomized study on a sample group of 50 patients.

An interview cum questionnaire method was used for the collection of data. Majority of the respondents (males and females) i.e. (88%) and (76%) had a monthly income upto Rs 20,000. (8%) males and (12%) females had an income between Rs 20,000-40,000 and very few (both males and females) belonged to the category upto Rs 40,000.

While surveying the health status of the patients, among females (63%) of them did not suffer from any health complaints while (32%) were suffering from health complaints. In case of males (12%) had health complaints whereas (88%) did not have any health complaints. Among them in case of females (16%) were overweight, (4%) obese, (8%) diabetic and (4%) were suffering from diabetes with hypertension. In males, (4%) each suffer from liver disease, diabetes and kidney disease.

Clinical changes were found in lips, face, teeth, skin, nails, eyes, gums, tongue and abdomen. However, hair loss as a result of the treatment was the major clinical change observed in all the 50 respondents (males and females).

Majority of the respondents (96%) do not take balanced diet a necessary consideration for their development and daily needs. The factor involved is insufficient awareness in the population. Only (4%) of the respondents were consuming a balanced diet.

Very few respondents (4%) follow cancer prevention dietary guidelines and a majority (96%) of the respondents are believed not to be following any specific dietary guidelines. This is because they have not been counselled properly. For instance, to take boiled and well-cooked food and avoid raw foods. Side by side if at all they are taught

but they ignore the directions and prove careless.

In the same way majority of the respondents (98%) were not counselled about their diet. But as reported by (Riccardo *et al.*, 2016) Nutritional counselling is the first line of treatment in malnourished cancer patients or those at nutritional risk, due to its proven efficacy in increasing protein-calorie intake, body weight and improving body composition. Therefore, all patients should be referred to a dietician for appropriate dietary intervention and its monitoring.

It is certain to educate the possible outcomes to the patient after the application of treatment regardless of the type of therapy. The patient feels getting the taste changed which affects the desire for taking food. There are various categories of patients who vary in expressing the real outcome after treatment. After treatment there are changes in sensation of taste in both males and females. When enquired from various respondents it was observed in case of males that (36%) experience spicy taste, (20%) salty and (4%) feel sour taste. But the majority (40%) of the male respondents expressed that they find no change. Among females (28%) could experience no taste change, (32%) each feel salty and spicy taste and (8%) experience sweet taste.

The patient also suffers from various chemotherapy related side effects. It was observed that majority of the male respondents suffer from lethargy, weight loss/weight gain, vomiting, mucositis, taste change and constipation after chemotherapy. In case of females, the major chemotherapy side effects experienced were lethargy, weight loss/weight gain, vomiting, nausea, mucositis and constipation.

When asked about the factors leading to weight loss during treatment, (56%) opined loss of appetite, (18%) each expressed vomiting and vomiting and loss of appetite both and (4%) each said diarrhoea and malabsorption could lead to weight loss.

About the frequency of meat consumption, it was found out that (46%) consume meat twice a week, (24%) opined daily consumption of meat, (18%) twice a week and (12%) said monthly.

Majority of the respondents (90%) did not consume fruits and vegetables as per nutritional guidelines and the rest (10%) were consuming fruits and vegetables as per nutritional guidelines. However, (Stephanie *et al.*, 2009) emphasized consuming a high intake of fruits, vegetables, whole grains and plant proteins such as soya as it was associated with reduced risk of cancer.

On collecting data regarding physical activity, (92%) replied in affirmative while (8%) did not perform any physical activity. Regarding monitoring body weight majority of the respondents (50%) check their weight after a year, (18%) respectively monitor their weight after three and six months, (12%) monthly and (2%) said on a weekly basis.

The American Society of Medical Oncology published guidelines in which at least moderate physical activity is



recommended in patients long surviving from cancer to reduce the risk of cancer relapse. Prevention of obesity-associated comorbidities (particularly diabetes, cardiovascular disease and hypertension) must be a primary objective in long surviving patients. These diseases not only in fact contribute in determining the outcome of cancer care (reducing toxicity related to treatment), but also increase the probability of relapse and death rates cancer-specific and not cancer-specific. (L.Di *et al.*, 2015)

All the respondents were of the opinion that proper dietary habits are important in preventing malnutrition among cancer patients and wanted knowledge about the same as they were not provided with enough dietary knowledge.

All the respondents affirmed that lifestyle behaviours could improve the quality and quantity of life. In accordance with (Stephanie *et al.*, 2009) it has been seen that lifestyle factors such as diet and physical activity make a difference not only in preventing the primary risk for cancer but also improving the quality of life.

Majority of the respondents (88%) thought therapy durations have an impact on the nutritional state, (8%) opined longer disease and (4%) said blood transfusions.

It was observed that personal hygiene was strictly maintained by all the respondents.

In this study, Malnutrition Screening Tool (MST) was used to quickly identify patients who are malnourished or at risk of developing malnutrition.

**Table 1:** Side effects experienced after chemotherapy

Side effects	Male	Female
Lethargy	Rank 1	Rank 1
Weight loss/weight gain	Rank 2	Rank 2
Vomiting	Rank 3	Rank 3
Nausea		Rank 4
Mucositis	Rank 4	Rank 5
Taste change	Rank 5	
Constipation	Rank 6	Rank 6

As per the above table, majority of the male respondents reported that they suffered from lethargy, weight loss/weight gain, vomiting, mucositis, taste change and constipation after chemotherapy. In case of females, the major chemotherapy side effects experienced were lethargy, weight loss/weight gain, vomiting, nausea, mucositis and constipation.

**Table 2:** Anthropometric measurements based on gender

Gender	Anthropometric measurements	Initial value (Mean±SD)	Final value (Mean±SD)
Male	Weight (in kg)	61.73 ±7.89	62.88 ±8.90
	BMI [wt in kg/ht (m <sup>2</sup> )]	22.254 ±2.58	22.673±3.064
Female	Weight (in kg)	58.47 ± 11.05	59.52±11.60
	BMI [wt in kg/ht (m <sup>2</sup> )]	23.198± 3.948	23.630± 4.205

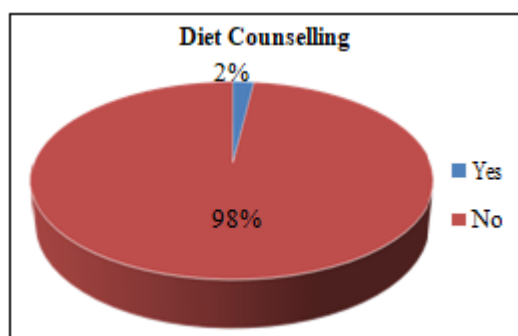
The data presented in Table 2 depicts the Mean±SD of the respondents. It is observed that Mean±SD of initial and final weight in males is 61.73 ±7.89 and 62.88 ±8.90. The Mean±SD of initial and final BMI is 22.254 ±2.58 and 22.673±3.064. However, in case of females

the Mean±SD of initial and final weight is 58.47 ± 11.05 and for BMI, the initial Mean±SD is 23.198± 3.948 and final Mean±SD is 23.630± 4.205.

**Table 3:** 24 Hr Recall of respondents

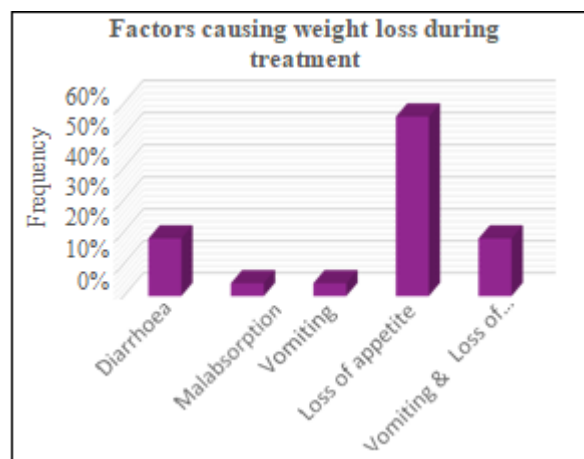
Gender	Energy Mean±SD	Protein Mean±SD	CHO Mean±SD	Fat Mean±SD
Female	1772.9±251.6	65.35±13.14	271.62±47.04	45.18±8.86
Male	1726.4±255.2	62.94±12.24	265.22±40.14	43.79±10.84

The data presented in Table 3 shows Mean±SD of energy, protein, CHO and fat for males and females. In case of females the Mean±SD for energy is 1772.9±251.6, protein 65.35±13.14, CHO 271.62±47.04 and fat is 45.18±8.86. For males the Mean±SD for energy, protein, CHO and fat is 1726.4±255.2, 62.94±12.24, 265.22±40.14 and 43.79±10.84 respectively.



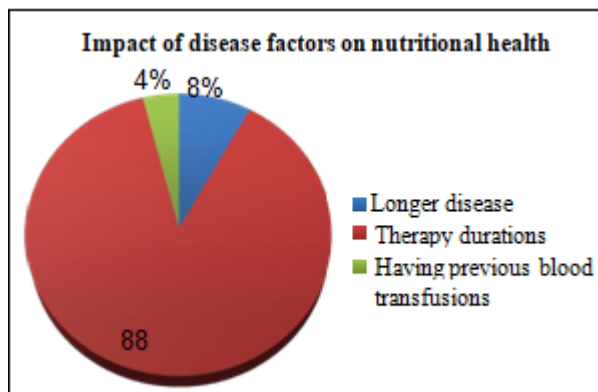
**Figure 4.1:** Diet Counselling

Only (2%) were counselled about the diet whereas (98%) of the respondents did not receive any diet counselling.



**Figure 4.2:** Factors causing weight loss during treatment

Loss of appetite is the main cause for weight loss during the treatment as expressed by (56%) of the respondents, (18%) each for vomiting, and vomiting and loss of appetite both. Minor (4%) each for diarrhoea and malabsorption.



**Figure 4.13:** Impact of disease factors on nutritional state

The above figure shows that (88%) of the respondents were of the opinion that therapy durations have an impact on the nutritional state of the person while (8%) thought longer disease period and (4%) said blood transfusions.

## 5. Conclusion

It can be concluded from the above study that cancer patients were ignorant and lacked knowledge about potential benefits of nutritional treatment. It is very important that dietitians educate and counsel these patients about consuming a well-balanced diet. Nutritional treatment should be started immediately after cancer diagnosis and must be continued throughout the treatment period and after. Weight management by balancing adequate calorie intake with proper exercise and consumption of a nutrient dense diet is an important factor for long term health after cancer diagnosis and defence against cancer recurrence. It is also important to discover affordable interventions which would help in correcting the nutritional status of patients and improve overall health. In accordance with (Stephanie *et al.*, 2009) Cancer survivors who adopt healthier lifestyle like regular physical exercise, diet low in fat and calories and high in fibre have better quality of life and survival than those cancer survivors who perform less physical activity and an unhealthy diet.

Hence, dietary counselling and nutrition intervention play a large role in influencing both the quality and quantity of life after diagnosis of cancer. Baldwin *et al.*, concluded that nutritional intervention among advanced malnourished patients was significantly correlated with better quality of life.

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