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 dietary factor is associated with cancer mortality. 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, diarrhoea, 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 diarrhoea 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 behaviours 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 post cancer treatment. Thus, it is very important to counsel these patients about consuming a healthful plant-based diet high in fruits and vegetables, whole grains and promote the importance of weight maintenance. A malnutrition screening tool should also be made compulsory to identify patients at risk.

Key Words: Nutritional Intervention, Diet Counselling, Oncology patients

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 stabilized 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 minimizing 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 monounsaturated 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 fiber 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 maximize 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

- To provide timely nutritional intervention to oncology patients
- To create awareness about the importance of dietary counselling in oncology patients
- 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)

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 tumor 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].

Isenringet.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 randomized 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 minimizing 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].

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, Body Mass Index, skin fold thickness and laboratory investigations were used to determine the nutritional status of the cancer patients. The data was collected through a closed ended 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 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 neutropenic diet. It is a diet plan for people suffering from weakened immune systems and avoiding foods which are more likely to cause infection.

History and food intake, change in body weight and problems with food intake were assessed. Relevant medical history aspects (diagnosis: medical therapy like medications, injections, chemotherapy and radiotherapy, blood parameters which includes WBC's, RBC'S, platelets, Hb, urea, creatinine, sodium, potassium, serum albumin, bilirubin, SGOT, SGPT, Amylase, blood sugar, HbA1c, cholesterol, triglycerides, HDL, LDL, VLDL etc, 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 dietary advice 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 telephonic 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.

RESULTS AND DISCUSSION:

The present topic is directed towards creating awareness about the importance of nutrition counselling and using a highly specific nutrition- based approach in oncology patients. The survey was a randomized study on a sample group of 50 patients.

A face-to face 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 comorbidity while (32%) were suffering from comorbidities. In case of males (12%) had comorbidities whereas (88%) did not suffer from any comorbidity. 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 suffered from liver disease, diabetes and kidney disease.

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

Majority of the respondents (96%) do not follow a balanced diet. The reason due to this 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.

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.

After treatment there are alterations in

taste (dysgeusia) in both males and females. When enquired from various respondents it was observed in case of males that (36%) experience more 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 more 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%) complained 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%) were found to consume meat daily, (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 (Fresh fruit should be washed properly, prefer whole fruits with thick skin: - Apple, Banana & Oranges, vegetables- cooked or canned, canned fruit)

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 (2015) in which at least thirty minutes of moderate to vigorous 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 appropriate dietary advice for neutropenic diet.

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 status, (8%) opined longer disease and (4%) said blood transfusions.

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

In this study, Malnutrition Screening Tool (MST) was used to quickly identify malnourished patients or those at risk of developing malnutrition. [10]

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 2	Rank 4
Mucositis	Rank 4	Rank 5
Taste change	Rank 5	Rank 4
Constipation	Rank 6	Rank 6

As per the above table, majority of the male respondents reported that they suffered from lethargy followed by 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. It was observed that in case of males no one suffered from nausea while in case of females no one suffered from taste change.

The ranking was done on the basis of most frequently occurred side effects in both males and females. The most frequently occurred side effect was ranked 1 and the least side effect was ranked 6.

Table 2: Anthropometric measurements based on gender

Gender	Anthropometric measurements	Initial value (Mean± SD)	Finalvalue (Mean± SD)
Male	Weight (in kg)	61.73 ±7.89	62.88 ±8.90
	BMI [wt in kg/ht (m^2)]	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^2)]	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 kgs and 62.88 ±8.90 kgs . The Mean±SD of initial and final BMI is 22.254 ±2.58 kg/m^2. and 22.673±3.064kg/m^2. However, in case of females the Mean±SD of initial and final weight is 58.47 ± 11.05kgs and for BMI, the initial Mean±SD is 23.198± 3.948kg/m^2 and final Mean±SD is 23.630± 4.205 kg/m^2

Table 3: 24 Hr Recall of respondents

Gender	Energy (kcal) Mean±SD	Protein (gms) Mean±SD	CHO (gms) Mean±SD	Fat (gms) 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 (kcal), protein (gms), CHO (gms) and fat (gms) for males and females. In case of females the Mean±SD for energy (kcal) is 1772.9±251.6, protein (gms) 65.35±13.14, CHO (gms) 271.62±47.04 and fat (gms) is 45.18±8.86. For males the Mean±SD for energy (kcal), protein (gms), CHO (gms) and fat (gms) is 1726.4±255.2 kcal, 62.94±12.24 gms, 265.22±40.14 gms and 43.79±10.84 gms 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 4.3

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.

CONCLUSION

It can be concluded from the above study that cancer patients were ignorant and lacked knowledge about potential health benefits of nutrition intervention. It is very important that dieticians educate and counsel these patients about consuming a well-balanced diet. Nutritional therapy should be started immediately after cancer diagnosis and must be continued throughout the treatment period and after. Optimal weight management by balancing adequate calorie intake with appropriate 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 adopted healthier lifestyle like regular physical exercise, diet low in saturated fat and calories from which source (Mam I have already mentioned it Stephanie *et al.*, 2009) and high in dietary fibre have an improved quality of life and survival than those cancer survivors who performed less physical activity and consumed an unhealthy diet.

Hence, nutrition counselling and dietary intervention play an important role in influencing the quality 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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