

Treatment-related dietary changes among cancer hospitalized patients at Khartoum Hospital for Cancers or Treatment (atom) -Sudan

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Abstract: Background: Patients undergoing cancer treatment experience many symptoms that can affect their ability to cope with many things such as eating certain types of foods during and after treatment. Nutrition is an important part of cancer treatment. Eating the right kinds of foods before, during, and after treatment can help you feel better and stay stronger. (1)

General objective:: the general objective of this study was to describe the dietary changes experienced by cancer patients associated with different treatment types

Specific objectives: was to identify the nutritional and treatment disorders resulting among hospitalized patients, to evaluate the nutritional intervention for the hospitalized cancer patients, to help the nutritionist, dietitian develop some programs to plan the appropriate meals for each patient according to the side effects due to cancer treatment

Justification: For our work in the field of nutrition, we need to better understand the relationship between treatment and diet among a larger and more diverse group of cancer patients and to know about hospital nutritional interventions that help relieve symptoms during treatment and improve quality of life.

Setting: Khartoum Hospital for Tumors Treatment (atom) is the first hospital in Sudan for the treatment of tumors. It was established in the year 1967 after it was one of the therapeutic departments in Khartoum Teaching Hospital. To become a specialized center for the diagnosis and treatment of tumors, thyroid diseases and various blood cancers. The hospital includes various medical and service cadres. The hospital provides diagnostic and treatment services for about (8000) new cases annually in addition to periodic follow-up cases, and the hospital services extend to many patients in neighboring areas. The number of patients with cancer has increased to 12 times during the previous years, despite this, it does not represent the real number of cancer patients. (2).

Method used: The descriptive analytical study was conducted by means of a questionnaire that was conducted with the hospitalized cancer patients at Khartoum Hospital for Oncology (atom) which is considered the largest and first hospital in Sudan. Among those who received treatment, to describe the dietary changes associated with different types of treatment, that was in (November 2021), the information was collected by a questionnaire, which was distributed among randomly selected patients (100). The number of all beds in the hospital was 345, most of them long-staying, and the number of those who agreed to fill out the questionnaire was only 100 patients, who were included in the analysis. We first began by presenting the idea of the questionnaire questions, their purpose, and the freedom to answer or not and then answering after approval. This questionnaire includes demographic characteristics, (gender, marital status, age in years, education level, occupation ...) and questions about the health status, such as the type of cancer, duration as well as questions about nutritional education and the types of treatment, food services...

Study design: This cross-sectional study was conducted among hospitalized cancer patients at Khartoum Hospital for Oncology who received treatment, to describe the dietary changes associated with different types of treatment.

Sampling: The study targeted all inpatients at Khartoum Hospital for Oncology during November 2021, who had agreed to fill out the questionnaire, and they are the patients who were randomly selected, and all those who did not agree to filling out the questionnaire were excluded. **Participants:** The number of hospitalized patients who agreed to participate in the questionnaire was 100.

Keywords: cancer treatment, hospitalized patients, tumors, thyroid diseases.

1. INTRODUCTION

as the malignant growth due to uncontrolled cell division. It is now used as a general term for over a hundred diseases characterized by the uncontrolled, abnormal growth of cells. At advanced stages, the cells spread (metastasis) locally or through the bloodstream and lymphatic system to other parts of the body. The first historical description of this condition was in relation to breast carcinoma. The term “cancer” came from Ancient Greek *καρκίνος* (Karkinos), meaning “crab”, because like crab cancer cells seem to “grab on and won’t let go”. (3). Cancer treatment may affect one's diet, and dietary changes can exacerbate other treatment related symptoms. For example, 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 (4)

Examples of cancer classifications by tissue type include: **Carcinoma:** This develops in epithelial tissues, such as those in the gastrointestinal tract or mucous membranes and . **Leukemia** : is a cancer that arises in the bone marrow, which produces blood cells. **Lymphoma:** This develops in the lymphatic system that includes the spleen, tonsils, and thymus. This system relates to immune activity and hormones. . **Mixed types:** Mixed cancers develop in two different types of cell from one category or multiple categories. **Myeloma:** Often occurring in the bone marrow, this type originates in plasma cells that circulate as part of the blood.. **Sarcoma:** These originate in connective tissue, developing in areas such as the bones, muscle, fat, and cartilage. Sarcomas are more common in young people. (5).

Impact of Cancer Treatment on Diet : Understanding of cancer staging is helpful to the dietitian working with oncology patients, as the stage of the patient's cancer may correlate with nutritional status and provide insight into possible nutrition interventions.(6).

Dietary changes:: change in appetite; change in frequency of eating; change in thirst; change in frequency of drinking fluids; increased or decreased taste sensitivities—bitter, metallic, salty, sour, and sweet; and increased sensitivity to various aromas.

Examples of Nutrition-Related Side Effects of cancer treatment : Side effects sometimes vary according to the type of cancer and the type of treatment Anorexia, Nausea, vomiting, Mucositis (stomatitis, esophagitis, gastritis, proctitis),Diarrhea , (7) .

nutrition health education: A dietitian plays an important role in helping patients manage symptoms associated with treatments, especially cancer treatment. By planning home meals to suit each patient individually, and educating patients to reduce the losses that cancer can cause in the patient's nutritional status.(8) .

2. RESULTS

The results were analyzed by SPSS V 22 and placed in the following tables and discussed.

{1} Demographic characteristic

Table {1:1} Participants ages

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid <15 years	25	25.0	25.0	25.0
15 - 25 years	18	18.0	18.0	43.0
26 - 40 years old	29	29.0	29.0	72.0
Over 40 years old	28	28.0	28.0	100.0
Total	100	100.0	100.0	

The above table {1:1} shows that the participants age group were (29.0%) in 26 -40 years of age group while (28.0 %) in range over 40year and (25%) of them in range <15 years only (18%) is in range 15-25 of years age .

Table {1:2} participants gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	50	50.0	50.0	50.0
Female	50	50.0	50.0	100.0
Total	100	100.0	100.0	

The above table { 1: 2 }, shows that (50 %) of the participants and (50%)were male were Female .

Table {1:3} Educational level

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid illiterate	27	27.0	27.0	27.0
Primary	29	29.0	29.0	56.0
secondary	27	27.0	27.0	83.0
University and above	17	17.0	17.0	100.0
Total	100	100.0	100.0	

The above table { 1:3 }, shows that most of the participants education (29%) were primary schools , (27 %) ,(27%) were illiteracy , secondary while only (17%) were university and above education

Table {1:4} marital status:

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid single	47	47.0	47.0	47.0
married	41	41.0	41.0	88.0
Divorced	5	5.0	5.0	93.0
Widower	7	7.0	7.0	100.0
total	100	100	100	

The above table {1:4} shows that most of the participants { 47.0% }were single and (41.0%) were married while (7.0%) were Widows and only (5.0%) were divorced .

Table {1:5} Occupation

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Working	44	44.0	44.0	44.0
I do not work	56	56.0	56.0	100.0
Total	100	100.0	100.0	

The above table {1:5}, shows that most of the participants (56%) were not working while 44.0% are working .

{2} The patient's health status:**Table {2:1} Cancer diagnosis:**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid the blood	25	25.0	25.0	25.0
bones	12	12.0	12.0	37.0
the mouth	8	8.0	8.0	45.0
glands	9	9.0	9.0	54.0
breast	10	10.0	10.0	64
prostate	7	7.0	7.0	71
throat	8	8.0	8.0	79
other	21	21.0	21.0	100
Total	100	100.0	100.0	

The above Table (2:1) , shows that the most cancer types diagnoses (25.0 %) were blood cancer followed by other types (21.0%) , and (12%) bones type then (10%) which were breast cancer type and glands (9%) while both of mouth and throat were (8%) , (8%) cancer diagnoses .

Table {2:2} sickness period:

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Less than 5 years	20	20.0	20.0	20.0
6-10- years	23	23.0	23.0	23.0
>10 years	57	57.0	57.0	57.0
Total	100	100.0	100.0	43.0

The table { 2:2},above Shows that most of the participants disease period (57.0%) were >10 years and (23.0%) were in 6-10 period of years while (20.0%) Participants sickness period were in less than 5 years .

The table {2:3}: type of treatment

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Chemical	87	87.0	87.0	87.0
radioactive	5	5.0	5.0	92.0
Both(Chemical radioactive)	5	5.0	5.0	97.0
Other	3	3.0	3.0	100.0
Total	100	100.0	100.0	

The Table above (2:3) , shows that (87%) of the participants used chemotherapy, (5%) used radiotherapy , (5%) used chemotherapy and radiotherapy while (3%) used Other treatment .

{3} diets services & nutritional health education**Table {3:1}The usual meal eaten in the hospital**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Ordinary hospital food	47	47.0	47.0	47.0
fortified hospital foods	7	7.0	7.0	54.0
Protein / Energy Supplement	5	5.0	5.0	59.0
special diet	40	40.0	40.0	99.0
Others	1	1.0	1.0	100.0
Total	100	100.0	100.0	

Table (3:1) above Shows that the most of the participants (47%) Received Ordinary hospital food Followed by (40%) of those who eat special meals , 7% of the participants Received fortified hospital foods and (5%) of the them Received Protein / Energy Supplement, while only (1 %) of the participants Received Others food .

Table {3:2} eating foods problems before & after starting the treatment?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Before	19	19.0	19.0	19.0
after	81	81.0	81.0	100.0
Total	100	100.0	100.0	

The above Table (3:2) shows that most of Participants (81%) had Nutritional Problems before Treatment and (19%) had problems before starting treatment

Table {3::3} foods problem with after starting the treatment

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
With all food	21	21.0	21.0	21.0
With certain food	60	60.0	60.0	81.0
Before treatment	19	19.0	19.0	100.0
Total	100	100.0	100.0	

The above Table (3:3) shows that 21% of the Participants had Nutritional Problems with al food after starting Treatment and 41 % had problems with certain foods while 19% already had problems before starting treatment

Table (3:4) Types of foods that caused problems after starting treatment

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Meat groups food	25	25.0	25.0	25.0
Eggs and eggs products	20	20.0	20.0	45.0
Vegetables & fruits	5	5.0	5.0	60.0
Milk and milk products	10	10.0	10.0	81.0
All foods	21	21	21	100.0
Before starting	19	19.0	19.0	
Total	100	100.0	100	

The above Table (3:4) shows that 25% of the participants have problems with meat food and 20 % have problems with Eggs and eggs products , Vegetables 5% , Milk and milk products 10% and 21% have problems with all food .

Table (3:5) Types of foods that caused problems before starting treatment

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Meat groups food	8	8.0	8.0	8.0
Eggs and eggs products	4	4.0	4.0	4.0
Vegetables 7 fruits	1.0	1.0	1.0	1.0
Milk and milk products	4.0	4.0	4.0	4.0
All foods	2	2.0	2.0	2.0
After treatment	81	81.0	81.0	19.0
Total	100	100.0	100.0	100.0

The above Table (3:5) shows that 8% of the participants who reported that they had a problem before the beginning of the treatment, their problem was the most with meat. and 4 % have problems with Eggs and eggs products , Vegetables 1 % , Milk and milk products 4 % and 2 % have problems with all food .

Table {3:6}. The change that occurs to food while eating it

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
food taste	20	20.0	20.0	20.0
the smell of food	4	4.0	4.0	24.0
Anorexia	52	52.0	52.0	76.0
psychological disorders against food	24	24.0	24.0	100.0
Total	100	100.0	100.0	

The table {3:6} above Shows that most of the participating patients (52%) suffer from a loss of appetite(anorexia) for food , (20 %) suffer from food taste , 4 % suffer from the smell of food, and(24%) of suffer from psychological disorders against food.

Table {3:7} suffering problems

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid vomiting	5	5.0	5.0	5.0
Diarrhea	1	1.0	1.0	6.0
Constipation	6	6.0	6.0	12.0
Burning feeling	67	67.0	67.0	79.0
Anorexia	21	21.0	21.0	100.0
Total	100	100.0	100.0	

The above table {3:7} Shows that Most of the participating patients (67%)suffer from burning, followed by loss of appetite(21%) , constipation (6%), vomiting (5%), as well as diarrhea (1%).

Table {3: 8} smoking during treatment

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	10	10.0	10.0	10.0
No	90	90.0	90.0	100.0
Total	100	100.0	100.0	

The above table {3:8} Shows that Participants smoke during treatment were (10%) while most of them (90%) are not .

Table {3:9} When do nutritional problems appear after starting treatment?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Immediately after the treatment started	34	34.0	34.0	34.0
During the first 6 hours	11	11.0	11.0	45.0
During the first 12 hours	24	24.0	24.0	69.0
After the first 24 hours	31	31.0	31.0	100.0
Total	100	100.0	100.0	

The above table {3:9} Shows that most of participants (34%) Their nutritional problems start immediately after the start of treatment , (11 %) start after 6 ours , and (24%),reported that the problem start After the first 24 hours (31%) reported that there problem start after 24 hours .

Table {3:9} hospital food intake reviewed daily

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	65	65.0	65.0	65.0
No	35	35.0	35.0	100.0
Total	100	100.0	100.0	

The above table {3:9} Shows that65% of the participants reported that the hospital food reviewed daily while (35 %) said no.

Table {3:10} received nutritional education in the hospital?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	85	85.0	85.0	85.0
No	15	15.0	15.0	100.0
Total	100	100.0	100.0	

The above table {3:10} Shows that (85%)of the Participants receive nutritional education in the hospital and (35%) did not

Table {3:11} nutritional education provider

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Dietitian	79	79.0	94.0	79.0
Doctors	1	1.0	1.0	80.0
nurse	2	2.0	2.0	82.0
Others	3	3.0	3.0	85.0
no	15	15.0	15.0	100.0
Total	100	100.0	100.0	

The above table {3:11} Shows that most of the Participants (79% reported that Nutritional education received from dietitian and 1% reported that from doctors , 2% from nurses while (3%) reported that they received it from other resources .

Table {3:12} method to receive nutritional education

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
written	30	30.0	30.0	30.0
orally	55	55.0	55.0	85.0
no	15	15.0	15.0	100.0
Total	100	100.0	100.0	

The above table {3:12} Shows that most of participants (55%) received nutritional education orally while 30% received it written .

Correlations

		treatment	food problem
treatment	Pearson Correlation	1	.379**
	Sig. (2-tailed)		.000
	N	100	100
food problem	Pearson Correlation	.379**	1
	Sig. (2-tailed)	.000	
	N	100	100

** . Correlation is significant at the 0.01 level (2-tailed).

3. DISCUSSION

The descriptive analytical study was conducted among 100 patients By means of a questionnaire that was conducted with the hospitalized cancer patients who were able to fill out the questionnaire we found that, Most of patients were over the age of 40 (29%) , 50% of them were women and the same as men, 29% of them have a primary education, Also, 56% of the participants do not work, perhaps because of the disease, Most types of cancer are leukemia, Many of them(57%) suffer from the disease for more than 10 years, which sometimes leads to the emergence of complications of the disease and may lead to hospitalization. Most of them (87 %) were treated with chemotherapy. Regarding food and its intake for patients, which was one of the objectives of this study, most of them (47%) answered that the meals provided are regular meals in the hospital or are repeated with some other food ingredients, which must be provided according to the patient's need so that the patient does not get bored of the type of meals served him from the hospital, And about the effect of food, whether its effect was before or after treatment, most of them(81%) reported that food problems often occur after taking treatment which is a lot of them (60%) said is happen with certain food and Most of the foods (25%)that cause these problems are meat and its derivatives , Where most of the participants reported that most of the problems of eating these foods are loss of appetite and changing the taste of foods (9 Some participants reported that sometimes there is a psychological disorder, as most of them reported that these problems such as burning, which in turn lead to other problems. for the effect of smoking on appetite reported that only 10% smoke (10) Most of the participants(79%) reported that there are advices given to them by the nutritionist. Among these advices is what is given verbally, and some of them are written

which is the most important. Because it can be with the patient after his discharge from the hospital and benefit from it. If a patient has a chronic condition, a carefully planned diet can make a difference. With certain diseases, what patient eat may reduce symptoms.(11).

4. CONCLUSION

We note from the analysis of the answers of the participants in this cross-sectional study that most of the participants have suffered from the disease for a long time, and all of them suffer from eating disorder problems, something that requires nutritional intervention that needs to develop special programs and differ from one patient to another due to the difference in symptoms and type of treatment. Meals are routine, something that may be due to the hospital's possibility and needs to reconsider that and make daily nutritional programs to meet their needs.

5. RECOOMEDATIONS

A clear course of nutritional care should indicate the action required based on the type of disease complications resulting from the type of treatment for patients and the change towards foods. Since cancer will inevitably lead to an increase in the number of diet-related cases, the additional funding will allow additional staff to handle the increased nutritional workload and help provide a variety of options to suit each patient. Future research should focus on how best to evaluate hospitalized cancer patients nutritional.

Ethical consideration: It was by sending a letter containing the address and objectives of the research to the hospital through the head of the nutrition department in the hospital, and after approval, permission was taken from each patient first and the purpose of the questionnaire was clarified.

Obstacles :Many patients due to suffering from the disease did not have the desire to answer and this had to be taken into account, Also, most radiotherapy patients leave to their homes without being admitted to the hospital.

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