
NUTRITIONAL STATUS AND INFORMATION NEEDS AMONG PATIENTS RECEIVING CHEMOTHERAPY AND RADIOTHERAPY

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Abstract:

BACKGROUND: Malnutrition is a frequent complication in patients with cancer and can negatively affect the outcome of treatments. On the other hand, side effects of anticancer therapies can also lead to inadequate nutrient intake and subsequent malnutrition. **AIM:** The present study aimed to assess nutritional status and information needs among patients receiving chemotherapy and radiotherapy. **DESIGN:** descriptive design. **SETTING:** This study was conducted in medical department (oncology department and blood diseases) at Benha University Hospital and concerning Zagazig University Hospital at Dar El Salam University Hospital. **SAMPLE:** A convenient sample of 150 patients. **TOOLS:** The tools of data collection were: Self-Administered questionnaire to assess patients demographic characteristics and nutritional status to patients receiving chemotherapy and radiotherapy . An interview questionnaire to assess Patients' information needs regarding to receive chemotherapy and radiotherapy . **RESULTS:** The present study showed that, Most of studied patients were complained of nausea Majority of studied patients were complained of body pain and fatigue. The majority of studied patients were suffered from taste of food changes and had nutritional changes. 48.7% of studied patients had total satisfactory information needs. While a highly statistical significant between total level of patients knowledge and their demographic characteristics at(gender, age and kind of treatment) with P value ($P \leq 0.01$). **CONCLUSION :** The present study showed that , all studied patients complained of health and nutritional problems. More than half of studied patients had unsatisfactory level of knowledge regarding informational needs regarding patients who are receiving chemotherapy and radiotherapy. **RECOMMENDATION:** The patients need to health program about content of food which should eating during treatment and know important of protein , calories and fluids during treatment. The patients need health program about how did deal with complication of treatment.

Key words: Chemotherapy, radiotherapy ,malnutrition, nutrition status, information needs, patients.

Introduction:

Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. Not all tumors are cancerous; benign tumors do not spread to other parts of the

body (*World Health Organization, 2014 & National Cancer Institute, 2014*).

Cancers are the leading causes of morbidity and mortality worldwide, and the number of new cases is expected to rise significantly over the next decades. At

the same time, all types of cancer treatment, such as surgery, radiation therapy, and pharmacological therapies are improving in sophistication, precision and in the power to target specific characteristics of individual cancers. All of these treatments, are impeded or precluded by the frequent development of malnutrition and metabolic derangements in cancer patients, induced by the tumor or by its treatment (Arends et al, 2016).

Chemotherapy is used to eliminate or reduce the number of cell in the primary tumor and metastatic tumor cell (cancer cells and normal cells). There are two major categories of chemotherapy drugs, cell cycle phase-nonspecific and cell cycle phase-specific (Held-Warmkessel, 2011).

Radiotherapy is an energy that is emitted from a source and travels through space or some material. Delivery of high-energy beams, when absorbed into tissue, produces ionization of atomic particles. The energy in ionizing radiation acts to break the chemical bonds in DNA. The DNA is damaged, resulting in cell death. Different types of ionizing radiation are used to treat cancer, including electromagnetic radiation (i.e., x-rays, gamma rays) and particulate radiation such as alpha particles, electrons, neutrons, protons (Haas, Gosselin, Dirkson & Bucher, 2011).

Nutritional status is vital to patients' overall clinical management. Food intake and appetite alterations have been identified as some of the main causes of malnutrition. The acceptance of foods is influenced by emotional and psychological factors in addition to those associated with the treatment and the disease itself. Metabolic disturbance is another problem among cancer patients, and this is often represented by catabolic status. The weight loss can occur in cachexia lead to reductions in lean body tissue (Rossi Fanelli, Lucia, Esposito, and Muscaritoli, 2012).

The nutrient needs of people with cancer vary from person to person. cancer care team can help to identify nutrition goals and plan ways to help meet the problem. Eating well while being treated for cancer might help: Feel better. Keep up strength and energy. Maintain the weight and body's store of nutrients. Better tolerate treatment-related side effects. Lower risk of infection. Heal and recover faster. Eating well means eating a variety of foods to get the nutrients of body needs to fight cancer. These nutrients include protein, carbohydrates, fat, water, vitamins, and minerals (Rock, Doyle & Demark-Wahnefried, 2012).

Anti-cancer treatment induce poor nutritional status by inducing nausea, vomiting and anorexia and gastrointestinal disorders as mucositis and diarrhea. Reversible lactose intolerance, associated with diarrhea, flatulence and poor nutritional status, is not infrequent in patients treated with 5-fluorouracil (FU)-based chemotherapy. Hypolactasia can easily be diagnosed with a lactose tolerance test. Dietary lactose restriction might improve tolerability to treatment. It is not only 5-FU that may cause malabsorption but also other drugs that affect cell proliferation such as thioguanine, methotrexate, vinca alkaloids, actinomycin D (Vandebroek, 2013).

Malnutrition is a clinical status that includes the imbalance in energy and other nutrients that affects tissue and body composition. Malnutrition common among cancer patients and has been associated with an increased risk of complications, decreased response to antineoplastic treatment (Balogun, Forbes, Widschwendter & Lanceley, 2011) Malnutrition affects not only the macronutrients that supply energy (carbohydrates, proteins, and fats) but also the biocatalytic and immunomodulating micronutrients. As macronutrients are the natural malnutrition is one of the main

reasons that cancer patients have an inadequate micronutrient status (**Gröber et al, 2013**).

The nutritional deficits can proceed to cancer cachexia, a specific form of malnutrition characterized by loss of lean body mass, muscle wasting, and impaired immune, physical, and mental function. Conversely, providing early nutrition intervention for patients can improve patients' nutritional status and help patients to maintain body weight, maintain lean body mass, better tolerate treatment, and improve quality of life. There for, all healthcare professionals who care for patients with cancer need to recognize the signs of malnutrition and be equipped to provide early and effective nutrition intervention to improve outcomes (**Fearon, Strasser& Anker, 2011**).

The information needs giving is ongoing and one in which all members of the multidisciplinary team have a role to play. However, information is a key component of the role of the chemotherapy and radiotherapy nurse to ensure that both patient and care have required information to make an informed decision about treatment options. This need is heightened with orally administered chemotherapy, and to support nurses, the Multinational Association of Supportive Care in Cancer has developed a comprehensive tool for providing such information (**Oakley et al, 2010**).

Many sources of information are available to patients, but they may need direction to information that is of a high quality and is relevant to them; they may need help to interpret the information. They should be offered informant in a language and format that is acceptable to them so that they can make decisions regarding their care and condition where possible. It may also be helpful to direct patients to local support groups where they exist. Specialist dietetic help is often required .Weight loss and weight gain (the

metabolic syndrome) can be problems after cancer treatment. However, new groups at risk are frequently being defined(**Vale, Tierney& Davidson , 2010**).

There are still gaps in knowledge and a need for more information regarding the side effects of chemotherapy and radiotherapy associated with nutrition and healthy eating. So, considering that the adverse effects of chemotherapy and radiotherapy are able to cause changes in the diet and nutritional status, detailed knowledge of these changes may contribute to the direction of the guidelines and behaviors aimed at these patients. So, little is known about intake and inadequacy of micro and macronutrients during treatment (**Kwok, Palermo & Boltong , 2015**).

Cancer clinical nurse specialists (CNS) are ideally placed to undertake the end of treatment assessment with the patient. The CNS is usually in contact with the patient throughout their cancer journey. They undertake a key role in the liaison with all members of the multidisciplinary team as well as care providers in the community or referring units. They will be available to offer support and information to patients and their careers and increasingly take on a 'key worker' role ensuring the smooth running of the patient pathway (**Andreyev et al, 2010**).

Aim of the study

The present study aimed to assess nutritional status and information needs among patients receiving chemotherapy at Benha University Hospital and radiotherapy at Zagazig University Hospital.

Through the following:

- 1- Assess nutritional status among patients receiving chemotherapy and radiotherapy.
- 2- Assess information needs among patients receiving chemotherapy and radiotherapy.

Research questions:

To achieve the aim of study the following research question were formulated:

- 1- What is the nutrition status among patients receiving chemotherapy and radiotherapy?
- 2- What are the information needs among patients receiving chemotherapy and radiotherapy?

Subjects and Methods**Research design:**

A descriptive exploratory research design was utilized to achieve the aim of the study.

Research Setting:

This study was conducted in medical department (oncology department and blood diseases) at Benha University Hospital & Zagazig University Hospital at Dar El Salam University Hospital, Sednawy (oncology Unit).

Sample : A convenience sample

Sample Size:

The Patients who received chemotherapy from Benha University Hospital (N=70), and patients who received radiotherapy from Zagazig University Hospital are randomly selected according to sample size (N=80).with different age ranging from(20-60 years).

Tools for data collection:

Two tools were utilized by the researcher to collect data pertinent to the present study:

I. Tool I:

This tool was a Self-Administered questionnaire to assess patients demographic characteristics and nutritional status to patients receiving chemotherapy and radiotherapy. This tool was developed by researcher based on review of recent literature

Part A : This part was assessed demographic characteristics of patients such as age, gender, educational level, Job, residence area, type of cancer, degree of disease, site of cancer, area of treatment , duration of treatment and duration of session

Part B: An interview questionnaire to assess nutritional status among patients receiving chemotherapy and radiotherapy by the researcher consists of 5 components covering patient's of nutrition status included

- 1- Patients weight and hemoglobin. It composed of 12 question included Current, recent weight, weight from month, height, BMI before treatment, during treatment and the last month from treatment and hemoglobin rate before and during treatment.
- 2- Rhythm of Food intake to patients receiving chemotherapy and radiotherapy..
- 3- Activity and function of patients at last month.
- 4- Health problems of patients receiving chemotherapy and radiotherapy.
- 5- Nutrition problems of patients receiving chemotherapy and radiotherapy.

Tool II: An interview questionnaire used to assess Patients' regarding information needs who receiving chemotherapy and radiotherapy consists of 3 components.

- 1- patient's knowledge included 14 question about weight loss rate, Nutritional co-morbidities, disease and its relation to nutritional requirements, metabolic demand, assess patient's knowledge about physical status includes a subjective evaluation of 3 aspects of body composition: fat, muscle, and fluid status, nutritional advice, source of advice about diet and nutrition, alternative diets and source of vitamins, overcome nutrition problems and supportive aid.

- 2- Psychosocial support of patients receiving chemotherapy and radiotherapy included 4 questions such as: present of supporting people, did they make food for you, did you make food by yourself and psychological relieve.
- 3- The patients described of nutrition state before and during treatment included 1 question consist of 5 items such as carbohydrate, protein, fats, sugar and salts.

Field work:-

Interview with patients to explain the aim of the study and take their oral consent to participate in the study prior to data collection through assessment of nutritional status of patients receiving chemotherapy and radiotherapy by using questionnaires. Firstly the 1st tool administered to all patients to assess their nutritional problems and Secondly the 2nd tool used to assess information needs to patients. The field work was carried out from the beginning of August, 2016 till the end of January, 2017 for data collection. The study was carried out three days per week to patients receiving chemotherapy (Sunday, Tuesday and Thursday) and average number of patients asked the questions were 2-3 patients. Some patients were receiving the session of treatment every 21 days or 7 days (breast & lung cancer). Some patients were receiving the session of treatment every 3 days (prostatic carcinoma). Some patients were receiving the session of treatment every 5 days (colon, stomach and cancer uterus). Some patients were receiving the session of treatment every 15 days (cancer rectum & lymphoma). Some patients were receiving the session of treatment every 2 days (testicular carcinoma). The study was carried out two days per week to patients receiving radiotherapy (Saturday and Wednesday). The average number of patients asked the questions were 10 patients. The sheet took about 20 to 25 minutes to fill by researcher. The patients

were receiving the session of treatment every day for 25 sessions except Thursday and Friday such as breast cancer, brain cancer, arm soft tissue carcinoma, lip squamous Cell Carcinoma and nasopharyngeal cancer.

Ethical considerations:

The ethical research considerations in this study will include the following:

- The research approval was obtained from the ethical committee before starting the study.
- An approval from director of Benha University Hospital was obtained.
- An approval from director of Zagazig University Hospital and director of oncology department were obtained.
- The researcher introduced herself to the patients and clarified the objective and aim of the study to the patients included in the study.
- The researcher assured maintaining anonymity and confidentiality of subjective data.
- Patients were informed that they were allowed to choose to participate or not in the study and they had the right to withdraw from the study at any time.
- The researcher was honest in reporting data, methods and results.

III. Administrative design:

An approval to carry out this study was obtained from the dean of the faculty of nursing, director of medical department, director of Benha university hospital and director of Zagazig university hospital. A letter was issued to them, explaining the aim of the study and methods of data collection to obtain permission and help. An oral consent to participate in the study was obtained from every patient included in the study sample.

IV. Statistical design:

The clinical data were recorded on a report form. These data were tabulated and analyzed using the computer program SPSS (Statistical package for social science) version 20 to obtain:

Descriptive data:

Descriptive statistics were calculated for the data in the form of:

1. Mean and standard deviation ($\pm SD$), for quantitative data.
2. Frequency and distribution for qualitative data.

Analytical statistics In the statistical comparison between the different groups, the significance of difference was tested using one of the following tests:-

- 1- Student's *t*-test:- Used to compare mean of two groups of quantitative data.
- 2- ANOVA test (F value):-Used to compare mean of more than two groups of quantitative data.
- 3- Inter-group comparison of categorical data was performed by using chi square test (X^2 -value) and fisher exact test (FET).

$$x^2 = \frac{\sum (observed - expected)^2}{Expected}$$

$$Expected = \frac{col.total \times rowtotal}{Grand total}$$

A *P* value <0.05 was considered statistically significant (*) while >0.05 statistically insignificant *P* value <0.01 was considered highly significant (**) in all analyses.

Results:

Table (1) show that about two third of studied patients (64.0%) were female. More than half of studied patients (57.3%) were less than 50 years. It also shows that more than half of studied group (50.7%) were primary education, and 58.0% lived in rural area, 50.7% of studied patients

were mostly housekeeping . And more than two third (73.3%) of patients were complained of second grade of cancer.

This table(2) revealed that total studied patients complained of health problems. Most of studied patients (85.3%) were complained of nausea. The mean causes of nausea& vomiting were from treatment (83.6&84.8) respectively. Majority of studied patients (93.3%) were complained of body pain. Majority of studied patients (92.7%) were complained of fatigue(tiredness). (38.7%) of studied patients were complained of gastritis.

This table (3) Illustrated that total studied patients complained of nutritional problems. The majority of studied patients (93.3%) were suffered from taste of food changes. And majority of studied patients (97.3%) had nutritional changes, and 26.7% of the studied patients had mastication problems &42.0 had swallowing problems. 65.1% of them due to mouth dryness.

This table (4) showed that majority of studied patients (94.7%) had correct answer regarding effect of treatment on chest and shoulder muscle (clavicle), muscle in different body part, leg (quadriceps) and body fats (triceps). All studied patients (100%) hope to find supportive aid. While (10.0%) of them had correct overcome nutrition problems. 18.7% of them had nutritional co-morbidities. 48.7% of studied patients had total satisfactory information needs.

Table(5) the results revealed that there was statistical high significant relation between nutrition state before and during treatment($p \leq 0.01$) except carbohydrate($p \leq 0.11$).

This table(6) The results revealed that there was statistical significant relation between total level of patient's knowledge who are receiving chemotherapy and radiotherapy and their demographic characteristics (occupation) with *P* value ($P \leq 0.05$). While a highly statistical

significant between total level of patient's characteristics (gender, age and kind of knowledge and their demographic treatment) with P value ($P \leq 0.01$).

Table 1: Frequency Distribution of Studied Patients Regarding Socio demographic and Medical Data (n=150):

Demographic characteristics	No	%
Sex		
Male	54	36.0
Female	96	64.0
Age		
<50y	86	57.3
≥50y	64	42.7
mean ±SD (range)	47.11±9.91 (20-60)	
Education level		
Illiterate	42	28.0
Primary education	76	50.7
University level	32	21.3
Residence		
Urban	63	42.0
Rural	87	58.0
Occupation		
Employer	57	38.0
Housewife	76	50.7
Worker	16	10.6
Others(student)	1	0.7
Type of cancer		
Benign	0	0.0
Malignant	150	100
Degree of spread		
Grade I	4	2.7
Grade II	110	73.3
Grade III	36	24.0
Place of treatment		
Benha university Hospital	70	46.7
El-Zagazig university Hospital	80	53.3
Kind of treatment		
Radiotherapy	80	53.3
Chemotherapy	70	46.7
Days of treatment (range)	1-21	

Table 2 : Frequency Distribution of Studied Patients Regarding Health Problems (n=150).

Items	No	%
Health problems		
Nausea	128	85.3
Causes of nausea (n=128)		
Seeing foods or drinks	10	7.8
Tasting foods or drinks	11	8.6
From treatment	107	83.6
Vomiting	118	78.7
Causes of vomiting (n=118)		
Smelling foods or drinks	3	2.5
Tasting foods or drinks	15	12.7
From treatment	100	84.8
Fullness after small amount of food or drink	79	52.7
Gastritis	58	38.7
Chest pain	66	44.0
Causes of chest pain from patient's opinion(n=66)		
Less vegetable eating	3	4.5
From treatment(chemo &radiotherapy)	55	83.3
From any other drugs	8	12.2
Discomfort due to distention	78	52.0
Diarrhea	59	39.3
How deal with diarrhea?	5	8.5
Excess fluids for diarrhea(n=59)	17	28.8
Anti diarrheal drug intake (n=59)		
Constipation	70	46.7
How deal with constipation?	66	94.3
Excess fluid intake (n=70)	59	84.3
Drug intake to increase intestinal motility(n=70)		
body pain	140	93.3
Analgesic intake to reduce pain	82	54.7
Tiredness(Fatigue)	139	92.7

Table 3 : Frequency Distribution of Studied Patients Regarding Nutritional Problems (n=150).

Items	No (150)	%
Nutritional problems		
Mouth dryness	127	84.7
Oral inflammation	99	66.0
Change of food taste	140	93.3
How changes looks like (n=140)		
Tasteless	54	38.6
Salty	17	12.1
Fatty	7	5.0
Others	62	44.3
Mastication problems	40	26.7
Causes of mastication problems (n=40)		
Pain	7	17.5
Loosing teeth	20	50.5
Mouth dryness	7	17.5
Aphthus	6	15.0
Swallowing problems	63	42.0
Causes of swallow problem (n=63)		
Pain	5	7.9
Mouth aphthus (mouth sores)	11	17.5
Mouth dryness	41	65.1
Nausea	2	3.2
Don't know	4	6.3
Drinking problems	38	25.3
Causes of drinking problems (n=38)		
Pain	4	10.5
Mouth aphthus	16	42.1
Nausea	15	39.5
Un acceptable fluids	3	7.9
Complementary fluids such as electrolyte fluid, juice	120	80.0
Nutritional changes	146	97.3

Table 4: Frequency Distribution of Studied Patients Regarding Nutritional Knowledge (n=150).

Items	Yes		No	
	No	%	No	%
Do you know rate of Weight loss through a month	73	48.7	77	51.3
Do you know rate of Weight loss through 6 months	99	66.0	51	34.0
Do you know the most Nutritional co-morbidities that need well nourished	28	18.7	122	81.3
Body needs for protein and calories	30	20.0	120	80.0
Do you know the effect of treatment on your body such as Chest& shoulder muscle (Clavicle muscles)	142	94.7	8	5.3
Muscles in different body part	142	94.7	8	5.3
Quadriceps at legs	142	94.7	8	5.3
Body fat through triceps measure	142	94.7	8	5.3
Do you find edema of your body	34	22.7	116	77.3
Do you have any Nutritional advice	78	52.0	72	48.0
Hearing about nutritional alternatives	93	62.0	57	38.0
Do you think that nutritional alternatives is useful?(n=93)	89	93.1	4	6.9
Take vitamins from support health	65	43.3	85	56.7
Do you think that vitamins and drugs are Useful? N=(65)	57	87.7	8	12.3
Overcome nutrition problems	15	10.0	135	90.0
Hope find Supportive aid	150	100	0	0.0

Table 5 :Relation between Nutrition Items before and during Treatment of Chemotherapy and Radiotherapy of Studied Patients (n=150)

Nutrition Items	Before treatment		During treatment		Test of significance	
	No	%	No	%	X ² test	P value
CHO(carbohydrate)						
Non	4	2.7	4	2.7	5.94	0.11
Mild	8	5.3	10	6.6		
Moderate	37	24.7	55	36.7		
Sever	101	67.3	81	54.0		
Protein						
Non	4	2.7	24	16.0	82.28	0.001**
Mild	0	0.0	43	28.7		
Moderate	32	21.3	33	22.0		
Sever	114	76.0	50	33.3		
Fats						
Non	8	5.3	31	20.7	28.86	0.001**
Mild	34	22.7	52	34.6		
Moderate	73	48.7	52	34.7		
Sever	35	23.3	15	10.0		
Sugar						
Non	6	4.0	57	38.0	57.59	0.001**
Mild	38	25.3	36	24.0		
Moderate	89	59.4	52	34.7		
Sever	17	11.3	5	3.3		
Salt						
Non	35	23.3	59	39.3	64.35	0.001**
Mild	88	58.7	26	17.3		
Moderate	27	18.0	45	30.1		
Sever	0	0.0	20	13.3		

*=Statistically significant at $P \leq 0.05$

**= Statistically high significant at $P \leq 0.01$

Table 6: Relation between Total Level of Patients Knowledge, Information Needs and Demographic Characteristics.

Demographic Characteristic	Total level of knowledge(n=150)				Test of significance	
	Satisfactory≥60% (n=73)		Unsatisfactory<60%(n=77)		X ² test	P value
	No	%	No	%	St test	
Gender						
Male	17	23.3	37	48.1	9.98	0.002**
Female	56	76.7	40	51.9		
Age						
<50y	32	43.8	54	70.1	4.29	0.001**
≥50y	41	56.2	23	29.9	10.59	0.001**
mean ±SD	50.48±9.5		43.91±9.25			
Education level						
Illiterate	22	28.8	21	27.3	5.6	0.06
Primary education	31	42.5	45	58.4		
University level	21	27.7	11	14.3		
Residence						
Urban	35	47.9	28	36.4	2.06	0.15
Rural	38	52.1	49	63.6		
Occupation						
Employer	29	39.7	28	36.4	^7.63	0.034*
Housekeeping	41	56.2	35	45.5		
Worker	3	4.1	13	16.9		
Others	0	0.0	1	1.3		
Degree of disease						
Grade I	3	4.1	1	1.3	^1.53	0.47
Grade II	51	69.9	59	76.6		
Grade III	19	26.0	17	22.1		
Kind of treatment						
Radiotherapy	50	68.5	32	41.6	10.97	0.001**
Chemotherapy	23	31.5	45	58.4		

*=Statistically significant at P≤0.05

**= Statistically high significant at P≤0.01

Discussion:

Cancer and cancer therapy affect nutritional status through alterations on the metabolic system and reduction in food intake. All of the treatments for cancer i.e. systemic chemotherapy, radiation and surgery result in damage to normal tissues, and at the same time produce intense side effects such as diarrhea, oral mucositis, nausea, and vomiting that limit eating. Malnutrition and severe weight loss become evident as the disease progress. Chemotherapy treatment especially is associated with several side effects like nausea, vomiting, oral mucositis, xerostomia, diarrhea, constipation, and food aversion which play an important role in decreased food intake, nutrient loss, energy expenditure alterations and weight loss, particularly lean body mass. These conditions predispose patients towards malnutrition (**Andreoli et al,2011**).

Regarding sex, the present study revealed that about two third of studied patients are female, more than half of the studied patients were less than 50 years with a mean of 47.11 ± 9.91 , half of studied patients were primary education, more than half of the studied patients lived in rural area, more than one third of studied subject are employers.

These findings agreed with the study conducted by **Bincy & Beena Chacko,(2014)** about of " assessment of nutritional status of patients receiving Chemotherapy" Nitte University Journal of Health Science and found that more than half of studied subject were female and Half of studied subjects were primary education and more than one third of studied subject are employers.

Also, These findings agreed with the study conducted by **Vergara et al(2013)** about of " Quality of Life and Nutritional Status Among Cancer Patients on Chemotherapy" found that more than half of studied subject were female. On the other hand these results disagreed

with **Adler & page,(2008)** about of " Cancer Care for the Whole Patient Meeting Psychosocial Health Needs" Institute of Medicine (US) and found that more than half of the studied patients were more than 50years.

These findings agreed with the study conducted by **Jun Tian., Zhen-Chun Chen& Li-Fang Hang, (2007)** about of "Effects of nutritional and psychological status in Gastrointestinal cancer patients on tolerance of treatment" and found that half of studied patients were primary education. Also, These findings agreed with the study conducted by **Soliman & Shehata ,(2015)** about of " Efficacy of Cryotherapy on Oral Mucositis Prevention among Patients with Head and Neck Cancers Who Undergoing Radiotherapy" Journal of Nursing and Health Science who found that approximately half of studied patients were primary education.

Also the results were supported by **Choenyi et al,(2016)** in a study entitled " Knowledge Regarding III Effects of Chemotherapy and Its Home Management among Patients Receiving Chemotherapy" who found that more than half of studied patients were primary education .Also, these findings were consistent with **Lavdaniti ,(2015)** in a study entitled "Assessment of Symptoms in Cancer Patients Undergoing Chemotherapy in Northern Greece" who mentioned that more than half of studied patients were primary education.

Regarding the area of living, approximately two third of studied patients came from rural area to treatment due to this service did not provided in rural area. These results were supported by **Choenyi et al,(2016)** in a study entitled " Knowledge Regarding III Effects of Chemotherapy and its Home Management among Patients Receiving Chemotherapy" who found that the same percent of studied patients lived in rural area . and these results disagreed with **Burnette, Duci**

and Dhembo,(2016) about of " Psychological distress, social support, and quality of life among cancer caregivers in Albania" who found that the most of studied patients lived in urban area.

The present study revealed that, more than two third of the studied patients complained of second grade of cancer related to moderately differentiated tumor(intermediate grade).These findings agreed with the study conducted by **Custódio et al,(2016)** about of " Impact of Chemotherapy on Diet and Nutritional Status of Women with Breast Cancer" from Brazil and found that more than half of studied patients had second grade of cancer. On the other hand, these findings were disagreed with **Patricia,(2009)** in a study about " The information needs and satisfaction with communication of cancer patients receiving palliative chemotherapy" who found that less than half of studied patients complained of second grade of disease .

Regarding the health problems of patients receiving chemotherapy and radiotherapy. The present study found that most of studied patients complained of nausea during chemotherapy and radiotherapy. These Results agreed with **Bolukbas & Kutlurkan, (2014)** in a study entitled" Symptoms and Symptom Clusters in Non Hodgkin's Lymphoma Patients in Turkey" who mentioned that more than two third of studied patients complained of nausea during treatment. But this result didn't come with **Armes et al,(2013)** who conducted a study about" Development and testing of the patient-reported chemotherapy indicators of symptoms and experience" who found that less than half of studied group complained of severe nausea during chemotherapy.

The present study found that three quarter of studied patients complained of vomiting during treatment. These findings were supported by **Armes et al,(2013)** who found that approximately two thirds

of studied patients complained of vomiting during chemotherapy. But these results disagree with **Bolukbas & Kutlurkan, (2014)** who found that approximately half of studied patients complained of vomiting during treatment.

Additional, the findings of the present study illustrated that less than half of studied patients complained of diarrhea during chemotherapy and less than half of studied patients complained of constipation during radiotherapy. These findings reflects the effect of chemotherapy and radiotherapy on bowel movement . These findings agreed with **Lavdaniti ,(2015)** in a study entitled "Assessment of Symptoms in Cancer Patients Undergoing Chemotherapy in Northern Greece" who found that less than half of studied group complained of diarrhea during chemotherapy. These findings are also in the same line with **Bolukbas & Kutlurkan, (2014)** who mentioned that less than half of studied patients complained of diarrhea during treatment.

The present study found that the majority of studied patients complained of body pain and fatigue during treatment due to cancer treatment and the cancer itself, as well as other individual factors can contribute to development of fatigue and are often difficult to differentiate . These findings are in the same line with **Karthikeyan et al,(2012)** in a study about of " Prevalence of fatigue among cancer patients receiving various anticancer therapies and its impact on quality of life" from Indian. who found that the majority of studied group complained of fatigue during treatment especially at chemotherapy. Also, the present study agreed with **Schlairet, Heddon, Griffis, (2010)** who conducted a study about " Piloting a needs assessment to guide development of a survivorship program for a community cancer center" and found that most of studied group complained of

fatigue as side effect from cancer and chemotherapy.

Regarding the nutritional problems of patients receiving chemotherapy and radiotherapy. The present study revealed that most of studied patients complained of mouth dryness, two third of studied group complained of oral inflammation and the majority of studied group complained of change of food taste and the majority of studied group complained of nutritional changes. These findings are in the same line with **Bolukbas & Kutluturkan, (2014)** who found that the most of studied patients complained of mouth dryness, oral inflammation and change of food taste.

The findings of the present study also found that less than half of studied patients complained of swallowing problems, these findings agree with **Bolukbas & Kutluturkan, (2014)** who found that less than half of studied patients complained of swallowing problems.

As regarding patients knowledge about effect of chemotherapy and radiotherapy on the triceps skin fold thickness, mid arm circumference and mid-arm muscle circumference. The present study found that studied patients had got the correct answer about the effect of chemotherapy and radiotherapy on clavicle , muscle , quadriceps(legs) and triceps. This study agreed with **Bincy & BeenaChacko, (2014)**who found that the triceps skin fold thickness, mid arm circumference and mid-arm muscle circumference effect (decreased) during chemotherapy and this findings assured that the patient s had the correct answer regarding this question.

As regarding of nutrition items (carbohydrates, protein, fats, sugar and salts). The present study found that less than half of the studied group during treatment had low calories intake (include carbohydrate and fats) and more than one quartered of studied group had protein intake during treatment. Also, there were statistical high significant ($P \leq 0.01$)

between nutrition items before and during treatment except carbohydrate.

These findings agreed with the study conducted by **Jun, Zhen-Chun & Li-Fang, (2007)** who found that less than half of the studied patients had low calories intake during treatment and one third of studied patients had low protein intake during treatment. and there was relation between intake calories' and protein before and during treatment, due to the patients who have not gotten enough calories and protein before chemotherapy may have severe side effects of chemotherapy or radiotherapy. Protein and calories are important for providing energy and enhancing physical performance status. Our results showed that pre-existing poor nutrition status of the patients could affect their physical performance status after cancer treatment.

In relation between total level of patient's knowledge and demographic characteristics, the results of the current study illustrated that there was a highly statistical significant relation ($P \leq 0.01$) between demographic characteristics at gender, age and patient's knowledge and statistical significant ($P \leq 0.05$) between demographic characteristics at occupation and knowledge score. These findings supported by **Patricia, (2009)** in a study about " The information needs and satisfaction with communication of cancer patients receiving palliative chemotherapy" who found that the average score for information needs was calculated for each patient. There was a statistical significant association between gender ($p=0.013$) and occupation ($p=0.045$) with informational needs using the one-way ANOVA test, Housewives patients had greater information needs than studied patients and in female's patients were found to have more information needs than males. also, there weren't a statistical significant effect for education.

These findings disagreed with **Patricia, (2009)** who found that there wasn't a statistical significant effect for age and grade of cancer. In addition to, these results disagreed with **Choenyi et al, (2016)** who found that there weren't statistical significant between gender, age and knowledge score.

Conclusion:

In the light of the study finding, some important facts could be concluded, all studied patients complained of health and nutritional problems. More than half of studied patients had unsatisfactory level of knowledge regarding informational needs regarding to patients who are receiving chemotherapy and radiotherapy. There was highly statistical significant relation between patients knowledge of total information needs and their BMI.

Recommendations:

In the light of the current study findings, the following recommendations are suggested:

- During cancer treatment patient should maintain adequate energy intake to prevent weight loss.
- The patients need to health program about content of food which should eating during treatment and know important of protein, calories and fluids during treatment.

further stud for Recommendations

- Improving services at hospitals to help patients on receiving treatment quickly.
- The further findings of the study have implications for Nursing Practice, Nursing Education, Nursing Administration and Nursing Research.

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