

Self Care Practices of Chemotherapy Patients

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Abstract: Cancer is one of the health problems today, which is perceived by public as frightening, anxiety, painful and untreatable disease that implies death. More than one half of patients diagnosed with cancer receive chemotherapy treatment which cause many side effects. Thus, the patients must assume major responsibility of their own care, and motivated to continue the regimen even when produces side effects. The study aimed to determine the side effects experienced by chemotherapy patients and describe self-care practices carried out by the patients to relieve the experienced side effects. This study design was cross sectional descriptive design conducted at Oncology Therapy Unit, Alexandria Main University Hospital. A convenient sample of 50 adult patients of both sexes were studied, 25 patients with colon cancer and 25 with breast cancer. Their age ranged from 23-63 years old. Two tools were used in the study to collect data. First tool was an interview schedule which included sociodemographic and health profile data. Second tool was Self- Care Practices Checklist included list of side effects of chemotherapy, patient's self-care practices and its outcomes carried out by the patients to relieve side effects of chemotherapy. The results of the study revealed that the main incidences of chemotherapy side effects were related to gastrointestinal system, neurological system and psychological status of patients. In conclusions, self-care practices performed by studied patients were insufficient to provide complete relief of the side effects due to inadequate information about the side effects of chemotherapy and how to manage it. It can be recommended that increase the number of qualified nurses at the chemotherapy in and outpatient clinics to provide the patient and family members with information regarding chemotherapy, its purpose, side effects and how to manage these side effects.

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1.Introduction

Cancer is a group of diseases which body's cells have abnormal DNA or genetic material. Cancer found in the human body are of several types.⁽¹⁾ The most common cancer types in men are (prostate, colorectal and lung) while in female the most common types are (breast and cervical).⁽²⁾ In Egypt the number of cancer patients is expected to increase as the prevalence of known etiological factors increase.^(3,4,5) In Alexandria and according to the Medical Research Institute statistical records , it has been estimated that in year 2009, 1116 patients were diagnosed with breast cancer.⁽⁶⁾

There are many different methods of cancer treatment, depending on the organ involved, stage of the cancer and patients' physical condition. The treatment also depends on the type and progression of cancer cells. Multiple modalities are commonly used in cancer treatment which includes surgery, chemotherapy, radiation therapy, immunotherapy (also called biotherapy), bone marrow transplants, gene, hormone and proton therapy and complementary medicine such as herbals, vitamins, chemicals, diet, meditation, massage, acupuncture and body – mind therapy.⁽⁷⁾

Chemotherapy uses chemical agents or drugs to destroy cancer cells in the cell cycle and inhibit the

growth and spread of cancerous cells. It may be combined with surgery or radiation therapy, or both to reduce tumor size preoperatively and to destroy remaining tumor cell postoperatively, or to treat some forms of systemic cancers as leukemia.^(8,9) Chemotherapy is usually given in cycles. People receive treatment for one or more days. Then they have a recovery period of several days or weeks before the next treatment session.⁽¹⁰⁾

The objective of chemotherapy is to stop the growth of cancer cells which abnormally divide rapidly. However, some rapidly dividing normal cells will be affected by chemotherapy, such as those lining the gastrointestinal tract, bone marrow cells and hair follicles. These side effects are commonly found in all patients. The patient would suffer from uncomfortable feelings .These symptoms might include fatigue, anorexia, nausea, vomiting, mouth sores and low white blood cell counts and low platelets which can cause abnormal bleeding.⁽¹¹⁾

The patient on chemotherapy will be affected by physical, mental, social conditions and complications, physically, mentally and socially, all of which affect patients' self-care behaviors .These side effects can appear immediately after a few days (acute), within a few weeks (intermediate), or months

to years after chemotherapy administration (long term).^(9,10)

Chemotherapy is frequently carried out on an outpatient basis and in some cases at the inpatient units attached to the chemotherapy department over an extended period of time. Thus, the patients must assume major responsibility of their own care, and must be encouraged and motivated to continue the regimen even when the treatment produces side effects.⁽¹²⁾ Patient education is the most effective intervention that begins early in the diagnostic phase and serves as a guide throughout treatments and follow-up care. Teaching patients about their treatment reduces fear, increases self-confidence, improves compliance and enhances their participation in self-care. The nurse is in a valuable position to identify what the patient needs to know about managing chemotherapy side effects and what resources are available to augment teaching.⁽¹³⁾

Oncology nurses therefore, are responsible for encouraging and promoting proper self-care of the patients being treated with chemotherapy. Self-care behaviors are preparation before receiving chemotherapy, self-conduct during and after chemotherapy and self-care at home. This way, patients can return to normal life in their own environment and society.⁽¹⁴⁾ The goal of promoting self-care by the patient has a long tradition in nursing, including the Nightingale model⁽¹⁵⁾ and the Orem theory of nursing.⁽¹⁶⁾ Orem describes self-care as the practice of activities that individuals personally initiate and perform on their own behalf to maintain life, health and well-being.⁽¹⁶⁾ Processes for achieving these goals include selecting healthy lifestyles, self-monitoring and assessing symptoms, perceiving and assigning meaning to symptoms, evaluating the severity of the situation, and determining treatment alternatives.⁽¹⁷⁾

Outcomes of self-care behaviors include reduction in morbidity associated with illness, increase use of health resources, more effective coping strategies, enhanced role performance, and increased independence in performance of daily living activities and enhanced self-esteem and well-being.⁽¹⁷⁾ Hence for this study was carried out to determine side effects experienced by cancer patients undergoing chemotherapy and these patients self-care practices carried out to relieve the experienced side effects.

Aim of The Study:

- 1- Determine the chemotherapy side effects experienced by cancer patients
- 2- Describe self-care practices carried out by chemotherapy patients to relieve the experienced side effects.

Research question

What are the self-care practices carried out by chemotherapy patients to relieve the experienced side effects?

2. Material And Method

Materials

Research design

A cross-sectional descriptive study was used in carrying out this study.

Setting

This study was conducted at the Oncology Therapy Unit, Alexandria Main University Hospital. The inpatient unit of chemotherapy consists of 12 beds.

Sample

A convenient sample was selected it consisted of 50 adult cancer patients who receiving chemotherapy, 25 patients with colon cancer and the rest were breast cancer. The sample inclusion criteria were male and female cancer patients on chemotherapy, between 23-63 years of age, able to communicate and agreeing to participate in the study. Free from any associated chronic debilitating diseases as DM, hypertension, rheumatoid arthritis and pulmonary disease and interviewed 24-72 hours following third cycle of chemotherapy according to the following protocol: For colon cancer patient received 5-Fluorouracil 500-1000 mg/sq meter surface area I.V, Oxaliplatin 50-100 mg/ sq meter surface area I.V, Folinic acid 500-1000 mg/sq meter surface area I.V. For breast cancer patient received 5-Fluorouracil 500-1000 mg/sq meter surface area I.V, Doxorubicin 50-100 mg/ sq meter surface area I.V, Cyclophosphamid 500-1000 mg/sq meter surface area I.V. The treatment cycle for colon and breast cancer patients was every 2-3 weeks for 6 cycles.

Tools of the study

Two tools were used for this study.

Tool I: An interview schedule was developed by the researchers based upon review of literature. It included cancer patient's sociodemographic data as age, sex, educational level, occupation and marital status, in addition to health profile data including diagnosis, surgery, treatment regimen and cycle of treatment

Tool II: The Self-Care Practices Checklist. This tool was developed by the researchers through review of literature.^(2,11,13,14,17,18) It included side effects of chemotherapy all over the body system, patient's self-care practices and its outcomes.

Method:

- 1- An official approval to conduct the study was obtained after explanation of the purpose of the study.
- 2- The developed tools were tested for its content validity by 3 faculty members in Medical Surgical Nursing, Faculty of Nursing, Alexandria University.
- 3- A pilot study was carried out on 7 patients and necessary modifications were done accordingly
- 4- The study subjects were interviewed 24 to 72 hours after started of the third cycle.
- 5- The researcher explained the aim of the study to patients and obtained their verbal consent to participate in the study. Every patient was interviewed at his/her room individually for a period of 45-60 minutes. Data were collected throughout the period from beginning of September to the end of November 2013.

Statistical analysis of the data

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. Qualitative data were described using number and percent. Quantitative data were described using mean and standard deviation for normally distributed data. Comparison between different groups regarding categorical variables was tested using Chi-square test Fisher's Exact test or Monte Carlo. The level of significance was judged at the $p \leq 0.05$

3.Results

Table (I): show the distribution of chemotherapy patients according to the sociodemographic and health profile data.

As regards the age, the results revealed that the high percentage of patients were ≥ 50 years old, while 76% were female and 70% of patients were illiterate or only read and write. The results also revealed that 88% of patients were married and having children. Also, this table showed that 78% of patients had surgery, and all the studied patients received chemotherapy, while 18% of the studied patient received radiotherapy.

Table (II): Illustrates the distribution of the main side effects of chemotherapy experienced by the studied sample.

The results of this study revealed that the main side effects of chemotherapy experienced by the participated patients were fatigue 100%, feeling of depression and frustration 83.7%, nausea 80%, vomiting 78%, loss of hair 80%, Anorexia 76%, drowsiness and loss of balance 74%, peripheral neuropathy 72%, taste alteration 74%, headache 68% and dryness of mouth and lips 68%.

Table (III): Illustrates the distribution of chemotherapy patients according to the side effects of chemotherapy on gastrointestinal system and outcomes of self-care practices.

In relation to dryness of mouth and lips, the results revealed that the majority of the patient moistened food with water and juice before eating, and sip liquids with and between meals. As regards self-care practices 79.4% of patient reported partial relief of the problem. Regarding nausea and vomiting, the result revealed that majority of patients notified the nurse to give them prescribed antiemetic drugs before the chemotherapy. It was also found that over 65% of patients reported partial relief of the problem. In relation to taste alteration, the results revealed that the majority of the patients not performed anything. In addition, the result shows that 59.5% of patients reported partial the problem was partially relieved. As regard anorexia, the majority of patients took adequate time, rest before each meal. While, 29.4% of colon cancer and 23.8% of breast cancer provide the aroma in food and drink dark honey. Also, it was found that 60.5% of patients reported partial relief of the problem.

Table IV shows the distribution of the studied sample according to the side effects of chemotherapy on sensation and psychological status and outcomes of self-care practices.

As regards self-care practices related to fatigue, the results revealed that 84%, 80% of patients with colon and breast cancer were limited their daily home activities and routine work consequently. The results also revealed that, 62.5% of patients reported partial relief of the problem. In relation to headache, the majority of patients took analgesic drugs and 65% of patients reported partial relief of the problems. In relation to feeling of depression and frustration the results revealed that the majority of the patients maintain prayers, reading Koran or listening Koran. Also, this table showed that 65.9% of patients reported partial relief of depression and frustration.

Table V shows the distribution of the studied sample according to the side effects of chemotherapy on neurological system and outcomes of self-care practices.

The results of this study revealed that the majority of the participated patients experienced neuropathies in the form of numbness in the extremities and hands and feet cramps. As regard self-care practices, the majority of the patients performed massage to the hands and feet. Also, it showed that 61.1% of the studied patients reported partial relief of the problem. Regarding, self-care practices related to drowsiness and loss of balance the present study indicated that the majority of patient took a period of rest and sleep. Also, it revealed that

73% of the participated patients reported partial relief of the problem.

4. Discussion

The findings of the present study revealed that the majority of the patients were females and above 50 years of age, were illiterate or only read and write, were married and having children. These results were in line with the findings of Bajano (2010) American Cancer Society (2008) and Canadian Cancer Society

(2013) reported that about 80% of all cancers arise in patients over age 50.⁽¹⁸⁻²⁰⁾

Chemotherapy as a treatment could be administered as a single agent or as a combination of two or more agents'. In the present study, the most common chemotherapeutic drugs given were 5-Fluorouracil, Doxorubicin, Cyclophosphamide, Oxaliplatin and Folinic acid. These drugs were mostly given in a combined form.

Table (1): Distribution of chemotherapy patients according to the sociodemographic and health profile data.

Sociodemographic and health profile data	Colon cancer (n= 25)		Breast cancer (n= 25)		Total (n= 50)		Test of sig.	p
	No.	%	No.	%	No.	%		
1 - Age (years)								
<40	9	36.0	2	8.0	11	22.0	$\chi^2 = 6.107$	0.047*
40 - <50	6	24.0	11	44.0	17	34.0		
≥ 50	10	40.0	12	48.0	22	44.0		
2 - Sex							$\chi^2 = 15.789^*$	<0.001*
Male	12	48.0	0	0.0	12	24.0		
Female	13	52.0	25	100.0	38	76.0		
3 - Education							$\chi^2 = 11.524^*$	0.001*
Illiterate or read and write	12	48.0	23	92.0	35	70.0		
Literate	13	52.0	2	8.0	15	30.0		
4 - Occupation							$\chi^2 = 1.020$	1.000
Working	0	0.0	1	4.0	1	2.0		
Not working	25	100.0	24	96.0	49	98.0		
5 - Marital Status							$\chi^2 = 0.758$	0.667
Not married	4	16.0	2	8.0	6	12.0		
Married	21	84.0	23	92.0	44	88.0		
6- Number of children							t = 1.098	0.278
Mean \pm SD.	3.12 \pm 1.96		3.68 \pm 1.63		3.40 \pm 1.8			
7- Weight (kg)							t = 2.768*	0.008*
Mean \pm SD.	64.28 \pm 21.95		78.76 \pm 14.23		71.52 \pm 19.71			
8- The type of treatment								
Previous Surgery							$\chi^2 = 1.049$	0.306
Yes	18	72.0	21	84.0	39	78.0		
No	7	28.0	4	16.0	11	22.0		
Chemotherapy							-	-
Yes	25	100.0	25	100.0	50	100.0		
No	0	0.0	0	0.0	0	0.0		
Previous Radiotherapy							$\chi^2 = 0.136$	0.713
Yes	4	16.0	5	20.0	9	18.0		
No	21	84.0	20	80.0	41	82.0		
9-Treatment cycles							t = 2.264*	0.028*
Min. - Max.	3.0 - 6.0		3.0 - 6.0		3.0 - 6.0			
Mean \pm SD.	4.44 \pm 1.33		3.68 \pm 1.03		4.06 \pm 1.24			

p: p value for comparing between the two studied groups χ^2 : value for Chi square t: Student t-test *: Statistically significant at $p \leq 0.05$

Table (2): Distribution of the main side effects of chemotherapy experienced by the studied samples.

Main side effects	Colon cancer (n= 25)		Breast cancer (n= 25)		Total (n=50)		χ^2	<i>p</i>
	No.	%	No.	%	No.	%		
1-Dryness of mouth and lips								
No	13	52.0	3	12.0	16	32.0	9.191*	FE <i>p</i> = 0.002*
Yes	12	48.0	22	88.0	34	68.0		
2-Taste alteration								
No	8	32.0	5	20.0	13	26.0	0.936	0.333
Yes	17	68.0	20	80.0	37	74.0		
3-Loss of hair (alopecia)								
No	10	40.0	0	0.0	10	20.0	12.500*	FE <i>p</i> <0.001*
Yes	15	60.0	25	100.0	40	80.0		
4-Nausea								
No	9	36.0	1	4.0	10	20.0	8.000	FE <i>p</i> = 0.005*
Yes	16	64.0	24	96.0	40	80.0		
5-Vomiting								
No	5	20.0	6	24.0	11	22.0	0.117	0.733
Yes	20	80.0	19	76.0	39	78.0		
6-Anorexia (loss appetite)								
No	8	32.0	4	16.0	12	24.0	1.754	0.185
Yes	17	68.0	21	84.0	38	76.0		
7-Peripheral neuropathy								
No	8	32.0	6	24.0	14	28.0	0.397	0.529
Yes	17	68.0	19	76.	36	72.0		
8-Drowsiness and loss of balance								
No	9	36.0	4	16.0	13	26.0	2.599	0.196
Yes	16	64.0	21	84.0	37	74.0		
9-Fatigue								
No	0	0.0	0	0.0	0	0.0	-	-
Yes	25	100.0	25	100.0	50	100.0		
10-Feeling of depression and frustration								
No	6	24.0	2	8.3	8	16.3	2.200	0.247
Yes	19	76.0	22	91.7	41	83.7		
11-Headache								
No	13	52.0	3	12.0	16	32.0	9.191*	FE <i>p</i> = 0.005*
Yes	12	48.0	22	88.0	34	68.0		

p: *p* value for comparing between the two studied groups

χ^2 : value for Chi square

FE: Fisher Exact test

MC: Monte Carlo test

*: Statistically significant at $p \leq 0.05$

Table (3): Distribution of chemotherapy patients according to the side effects of chemotherapy on gastrointestinal system and outcomes of self-care practices

GI side effects ,self-care practices and its effects	Colon cancer (n= 25)		Breast cancer (n= 25)		Total (n=50)		χ^2	p
	No.	%	No.	%	No.	%		
1-Dryness of mouth and lips								
No	13	52.0	3	12.0	16	32.0	9.191*	FE p = 0.002*
Yes	12	48.0	22	88.0	34	68.0		
Cycle	n = 12		n =22		n = 34		1.677	MC p = 0.477
1 st	6	50.0	12	54.5	18	52.9		
2 nd	3	25.0	2	9.1	5	14.7		
3 rd	3	25.0	8	36.4	11	32.4		
Self-care practices	n = 12		n =22		n = 34			
No practice	3	25.0	3	13.6	6	17.6		
Moisten food with water and juice	6	50.0	17	77.3	23	67.6		
Sip liquid with and between meals	6	50.0	16	72.7	22	64.7		
Lubricate mucosa with butter, corn oil before meals	2	16.7	1	4.5	3	8.8		
Avoid any irritant , spicy and acidic foods	0	0.0	1	4.5	1	2.9		
Notify a doctor	0	0.0	3	13.6	3	8.8		
Effect of self- care practice	n = 12		n = 22		n =34		0.221	FE p = 0.677
Not relived	3	25.0	4	18.2	7	20.6		
Partial relief	9	75.0	18	81.8	27	79.4		
2-Nausea								
No	9	36.0	1	4.0	10	20.0	8.000	FE p = 0.005*
Yes	16	64.0	24	96.0	40	80.0		
Cycle	n= 16		n= 24		N = 40		0.478	MC p = 1.000
1 st	14	87.5	20	83.3	34	85.0		
2 nd	1	6.3	3	12.5	4	10.0		
3 rd	1	6.3	1	4.2	2	5.0		
Self-care practices	n= 16		n= 24		N = 40			
No practice	2	12.5	3	12.5	5	12.5		
Avoid intake of food or fluid immediately before chemotherapy	1	6.3	2	8.3	3	7.5		
Take drugs that decrease the nausea before chemotherapy	13	81.3	20	83.0	33	82.5		
Avoid shaking or changing the position after eating	0	0.0	1	4.2	1	2.5		
Take period of rest and relax after meal	0	0.0	2	8.3	2	5		
Notify a doctor	0	0.0	3	12.5	3	7.5		
Effect of self- care practice	n= 16		n= 24		N = 40		11.868*	MC p = 0.003*
Not relived	9	56.3	2	8.3	11	27.5		
Partial relief	7	43.8	19	79.2	26	65.0		
Complete relief	0	0.0	3	12.5	3	7.5		
3-Vomiting								
No	5	20.0	6	24.0	11	22.0	0.117	0.733
Yes	20	80.0	19	76.0	39	78.0		
Cycle	n= 20		n= 19		N = 39		6.121	MC p = 0.047*
1 st	9	45.0	15	78.9	24	61.5		
2 nd	7	35.0	1	5.3	8	20.5		
3 rd	4	20.0	3	15.8	7	17.9		
Self-care practices	n= 20		n= 19		N = 39			
No practice	0	0.0	2	10.5	2	5.1		
Set in open ventilated place during chemotherapy	0	0.0	2	10.5	2	5.1		
Keep disposable bag to collect vomits	2	10.0	3	15.8	5	12.8		
Avoid eating, drinking any thing after chemotherapy	1	5.0	2	10.5	3	7.7		
Notify a nurse to give the prescribed antiemetic medication	19	95.0	14	73.7	33	84.6		
Notify a doctor	2	10.0	1	5.3	3	7.7		
Effect of self- care practice	n= 20		n= 19		N = 39		9.003*	MC p = 0.006*
Not relived	7	35.0	0	0.0	7	17.9		
Partial relief	11	55.0	18	94.7	27	69.2		
Complete relief	2	10.0	1	5.3	3	7.7		

p: p value for comparing between the two studied groups

 χ^2 : value for Chi square

FE: Fisher Exact test MC: Monte Carlo test

*: Statistically significant at $p \leq 0.05$

Table (3): (Continuation) Distribution of chemotherapy patients according to the side effects of chemotherapy on gastrointestinal system and outcomes of self- care practices

GI side effects ,self-care practices and its effects	Colon cancer (n= 25)		Breast cancer (n= 25)		Total (n=50)		χ^2	p
	No.	%	No.	%	No.	%		
4-Taste alteration								
No	8	32.0	5	20.0	13	26.0	0.936	0.333
Yes	17	68.0	20	80.0	37	74.0		
Cycle	n= 17		n= 20		n=37			
1 st	9	52.9	16	80.0	25	67.6	6.905*	MC p= 0.030*
2 nd	5	29.4	0	0.0	5	13.5		
3 rd	3	17.6	4	20.0	7	18.9		
Self-care practices	n= 17		n= 20		n=37			
No practice	11	64.7	8	40.0	19	51.3		
Use the aroma of food to stimulate taste	0	0.0	4	20.0	4	10.8		
Sweeteners of foods	1	5.9	2	10.0	3	8.1		
Avoid sight and smell of food causing unpleasant sensation	2	11.8	2	10.0	4	10.8		
Use lemon drops	5	29.4	5	25.0	10	27.0		
Increase fluid intake (juice)	0	0.0	5	25.0	5	13.5		
Notify the nurse	0	0.0	2	10.0	2	5.4		
Effect of self- care practice	n=17		n=20		n=37			
Not relieved	9	52.9	6	30.0	15	40.5	2.006	FE p = 0.193
Partial relief	8	47.1	14	70.0	22	59.5		
Complete relief	0	0.0	0	0.0	0	0.0		
5-Anorexia (loss appetite)								
No	8	32.0	4	16.0	12	24.0	1.754	0.185
Yes	17	68.0	21	84.0	38	76.0		
Cycle	n= 17		n= 21		n= 38			
1 st	12	70.6	17	81.0	29	76.3	1.457	MC p= 0.553
2 nd	4	23.5	4	19.0	8	21.1		
3 rd	1	5.9	0	0.0	1	2.6		
Self-care practices	n= 17		n= 21		n= 38			
No practice	3	17.6	5	23.8	8	21.0		
Provide oral hygiene before meals	0	0.0	2	9.5	2	5.2		
Avoid food, fluid that make taste alteration as meat chocolate, tea, coffee	1	5.9	0	0.0	1	2.6		
Provide adequate time, rest before each meal	11	64.7	12	57.1	23	60.5		
Provide the aroma in food and drink dark honey	5	29.4	5	23.8	10	26.3		
Notify the nurse	2	11.8	2	9.5	4	10.5		
Effect of self- care practice	n= 17		n= 21		n= 38			
Not relieved	9	52.9	6	28.6	15	39.5	2.335	0.126
Partial relief	8	47.1	15	71.4	23	60.5		

p: p value for comparing between the two studied groups

 χ^2 : value for Chi square

FE: Fisher Exact test

MC: Monte Carlo test

*: Statistically significant at $p \leq 0.05$

Table (4): Distribution of the chemotherapy patients according to the side effects of chemotherapy on sensation and psychological and outcomes of self-care practices

Sensation and psycho side effects, self- care practices and its effects	Colon cancer (n= 25)		Breast cancer (n= 25)		Total (n=50)		χ^2	p
	No.	%	No.	%	No.	%		
1-Fatigue								
No	0	0.0	0	0.0	0	0.0		
Yes	25	100.0	25	100.0	50	100.0	-	-
Cycle	N = 25		N = 25		N = 50			
1 st	18	72.0	19	76.0	37	74.0	1.027	MC p = 1.000
2 nd	6	24.0	6	24.0	12	24.0		
3 rd	1	4.0	0	0.0	1	2.0		
Self-care practices	N = 25		N = 25		N = 50			
Provide adequate rest during the day	22	88.0	23	92.0	45	90.0		
Limit the daily home activity, routine work	21	84.0	20	80.0	41	82.0		
Use the supporting of others during walking	2	8.0	2	8.0	4	8.0		
Provide adequate diet as meat, fish, milk and fruits as orange, lemon juice	8	32.0	4	16.0	12	24.0		
Take tonic drugs	0	0.0	2	8.0	2	4.0		
Notify the doctor	0	0.0	1	4.0	1	2.0		
Effect of self- care practice	N = 25		N = 25		N = 25			
Not relieved	12	52.2	5	20.0	17	35.4	5.943	MC p = 0.032*
Partial relief	11	47.8	19	76.0	30	62.5		
Complete relief	0	0.0	1	4.0	1	2.1		
2-Headache								
No	13	52.0	3	12.0	16	32.0	9.191*	FE p = 0.005*
Yes	12	48.0	22	88.0	34	68.0		
Cycle	N = 12		N = 22		N = 34			
1 st	7	58.3	19	86.4	26	76.5	8.317*	MC p = 0.021*
2 nd	4	33.3	0	0.0	4	11.8		
3 rd	1	8.3	3	13.6	4	11.8		
Self-care practices	N = 12		N = 22		N = 34			
No practice	0	0.0	1	4.5	1	2.9		
Provide pressure cap on head	0	0.0	4	18.2	4	11.7		
Maintain adequate rest during the day	5	41.7	1	4.5	6	17.6		
Drinking a cup of tea or coffee	0	0.0	1	4.5	1	2.9		
Ask the nurse to measure blood pressure	0	0.0	1	4.5	1	2.9		
Take analgesic drugs	7	58.3	19	86.4	26	76.4		
Notify the doctor	2	16.7	6	27.3	8	23.5		
Effect of self- care practice	N = 12		N = 22		N = 34			
Not relieved	5	41.7	1	4.5	6	17.6	9.917*	MC p = 0.006*
Partial relief	5	41.7	20	90.9	25	73.5		
Complete relief	2	16.7	1	4.5	3	8.8		
3-Feeling of depression and frustration								
No	6	24.0	3	8.3	9	16.3	2.200	0.247
Yes	19	76.0	22	91.7	41	83.7		
Cycle	N = 19		N = 22		N = 41			
1 st	17	89.5	21	95.5	38	92.7	1.208	MC p = 0.725
2 nd	1	5.3	0	0.0	1	2.4		
3 rd	1	5.3	1	4.5	2	4.9		
Self-care practices	N = 19		N = 22		N = 41			
No practice	3	15.8	1	4.5	4	9.7		
Set alone and not talk with others	10	52.6	5	22.7	15	36.5		
Maintain prayers, reading Quran or listening to Quran	11	57.8	22	100.0	33	80.5		
Notify the doctor	0	0.0	0	0.0	0	0.0		
Effect of self care practice	N = 19		N = 22		N = 41			
Not relieved	8	42.1	5	22.7	13	31.7	2.412	MC p = 0.322
Partial relief	11	57.9	16	72.7	27	65.9		
Complete relief	0	0.0	1	4.5	1	2.4		

p: p value for comparing between the two studied groups

 χ^2 : value for Chi square

FE: Fisher Exact test

MC: Monte Carlo test

*: Statistically significant at $p \leq 0.05$

Table (5): Distribution of the chemotherapy patients according to the side effects of chemotherapy on neurological systems and outcomes of self-care practices

Neuro side effects, self- care practices and its effects	Colon cancer (n= 25)		Breast cancer (n= 25)		Total (n=50)		χ^2	p
	No.	%	No.	%	No.	%		
1-Neuropathies (numbness in extremities and cramps)								
No	8	32.0	6	24.0	14	28.0	0.397	0.529
Yes	17	68.0	19	76.	36	72.0		
Cycle	n=17		n=19		n=36		4.755	MC p =0.088
1st	6	35.3	13	68.4	19	52.8		
2 nd	8	47.1	3	15.8	11	30.6		
3 rd	3	17.6	3	15.8	6	16.7		
Self-care practices	n=17		n=19		n=36			
No practices	4	23.5	7	36.8	11	30.5		
Provide hands and foot massage	10	58.8	9	47.4	19	52.7		
Protect foot from cold by wearing socks	1	5.9	1	5.3	2	5.5		
Take drugs	3	17.6	0	0.0	3	8.3		
Notify the doctor	1	5.9	3	15.8	4	11.0		
Effect	n=17		n=19		n=36		0.071	FE p = 1.000
Not relieved	7	41.2	7	36.8	14	38.9		
Partially relief	10	58.8	12	63.2	22	61.1		
2-Drowsiness and loss of balance								
No	9	36.0	4	16.0	13	26.0	2.599	0.196
Yes	16	64.0	21	84.0	37	74.0		
Cycle	n=16		n=21		n=37		2.692	0.262
1st	6	37.5	12	57.1	18	48.6		
2 nd	3	18.8	5	23.8	8	21.6		
3 rd	7	43.8	4	19.0	11	29.7		
Self-care practices	n=16		n=21		n=37			
No practices	4	25.0	1	4.8	5	13.5		
Take adequate time of rest and sleeping	9	56.3	17	81.0	26	70.2		
Provide helping of other persons	1	6.3	0	0.0	1	2.7		
Take adequate fruits as orange , grapes	4	25.0	8	38.1	12	32.43		
Take medication	1	6.3	2	9.5	3	8.1		
Effect	n=16		n=21		n=37		3.997	FE p =0.067
Not relived	7	43.8	3	14.3	10	27.0		
Partially relief	9	56.3	18	85.7	27	73.0		

p: p value for comparing between the two studied groups

 χ^2 : value for Chi square

FE: Fisher Exact test

MC: Monte Carlo test

*: Statistically significant at $p \leq 0.05$

This finding was explained by Robinson (2002) and Phipps *et al.* (2003) who stated that chemotherapeutic drugs are most frequently given in a combined form that enhances the effect of drugs on tumor cell, lead to cell killing, minimize drug resistance and increases survival.^(21,22)

This study was conducted at the third cycle of chemotherapy, this time was selected to allow time for the drugs side effects to appear. The Cancer Research UK (2012) reported that chemotherapeutic agents cause side effects that can appear immediately i.e.

after few days, within few weeks or month to years after chemotherapy administration.⁽²³⁾

The results of the present study revealed that fatigue was experienced by all participating patients following the first cycle. In this regard Ibrahim (2001) and Horng-Shiuann *et al.* (2006) stated that fatigue and lethargy were noted to be the two most frequent and significant problems associated with chemotherapy. This could be due to anemia, pain, trouble sleeping, trouble breathing, appetite changes and infection.^(24,25) Also, these findings are congruent

with Hoyle (2010) who stated that chemotherapy damages healthy cells and body systems in addition to addressing cancer, this type of damage can trigger treatment side effects that include headaches.⁽²⁶⁾

As regard self-care practices for fatigue, the majority of patients were limited their daily home activities and routine work consequently for few days after chemotherapy. This result is in line with Dean et al reported that fatigue had an adverse effect on the individual's sense of well-being and daily performance of activities.⁽²⁷⁾

In relation to, gastrointestinal side effects, the results showed that (80%,78%,68%,74%,76%) of the studied patients experienced nausea, vomiting, dryness of mouth, taste alteration and loss of appetite following the first cycle. These results were consistent with Bajano (2010) who found that the majority of his studied patients post chemotherapy were always or sometimes experiencing a lot of stressors as nausea, vomiting, dryness of mouth, taste alteration, constipation, stomatitis, diarrhea, abdominal pain and loss of appetite.⁽¹⁸⁾ The potential consequence of these problems includes reduced interest in food resulting in decreased oral intake that may lead to nutritional compromise and weight loss.

As regard self-care practices to relieve nausea and vomiting, the results showed that the majority of patients reported that notified the nurse to give prescribed antiemetic drugs before chemotherapy. This could be attributed to the patient belief that medical measures may alleviate or control their symptoms. These results are inconsistent with Ibrahim (2001) who found that the majority of patients reported avoiding sight, smell, foods and fluids intake immediately prior to chemotherapy.⁽²⁴⁾

The results of the present study revealed that the majority of participated patients experienced neuropathies in form of numbness in extremities, hands and feet cramp, drowsiness and loss of balance following the first cycle. These results are supported by The American cancer society (2008) stated that chemotherapy can interfere with certain central nervous system functions causing tiredness, confusion, sleep troubles and blurred vision that 5-Fluorouracil and Oxaliplatin and cisplatin affect large diameter fiber of the neural tissue, resulting in sensory changes.⁽¹⁹⁾

As regard to self-care practices, related to peripheral neuropathies, the majority of patient reported that hands and feet massage to alleviate their sensory alterations. For self-care practices related to drowsiness and loss of balance, the majority of patient reported solving these problems by periods of rest and sleep. This finding is supported by Eldridge (2013) who mentioned that neurotoxicity will affect patients by decreasing their mobility, ability for self-care and

ability to perform fine motor skills. Therefore these patients must be taught the importance to report any neurological deficits before becoming more severe and difficult to handle.⁽²⁸⁾

The present study also revealed that the majority of patients had reported depression and frustration following chemotherapy. These results are supported by Obajano (2010) found that many of his studied patients stated that during both pre and post chemotherapy they were always suffering from high anxiety, depression, frustration, sadness, fear of death worry about body image and about future, diagnosis of cancer and chemotherapy which could effect on their physical well-being and psychological function.⁽¹⁸⁾

As regard self-care practices to relieve depression, many patients in the present study reported that maintained prayers, reading Quran or listening to Quran. This reflects the strong belief that spiritual aids can provide relieving of the problem. They were highly satisfied with their faith in Allah and believed that illness is not a punishment but rather a test of their religious commitment. This result was in line with Baider (2010) who stated that religion was an important source of support for many patients.⁽²⁹⁾

Conclusions

Based on the finding of the present study, it can be concluded that:

1. Fatigue, drowsiness and loss of balance, numbness in extremities and hands and feet cramps were the most common physiological side effects on nervous system. Also, nausea, vomiting, dry mouth, anorexia and taste alteration were the most common physiological side effects on gastrointestinal system and depression and frustration were the most psychological side effects reported by the studied patients.
2. Self-care practices performed by studied patients were insufficient to provide complete relief of the side effect due to inadequate information about the side effects of chemotherapy and how to manage it.

Recommendations

1. Increase the number of qualified nurses at the chemotherapy in and outpatient clinics to provide the patient and family members with information regarding chemotherapy, its purpose, side effects and how to manage these side effects.
2. Encourage the patient and family members to attend health teaching and counseling program about chemotherapy related side effects and how to deal and cope with these side effects.

3. Encourage the oncology nurse to attend and participate in educational programs, workshops and reviewing up-date-oncology research.
4. Regular assessment of both chemotherapy side effects and health status should be a part of routine follow-up visits.
5. Establishing rehabilitation center for cancer patient that focus on physical and psychological aspect of care.
6. A manual booklet of side effects of chemotherapy and how to manage it should write in simple words and use attractive pictures given to the patients and family.
7. Developed standard for care of patients receiving chemotherapy.

For future research, study the impact of educational program in improving health status for patients receiving chemotherapy.

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