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Effect of Teaching Program on Chemotherapy Outcomes for Cancer Elderly Patients at Assiut University Hospitals

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Abstract:
Aim: *To investigate the effect of teaching program on chemotherapy outcome for cancer elderly patients. Quasi-experimental research design was used in this study. The study was conducted in oncology out-patient clinics at Assiut University Hospitals. The sample of this study included (50) elderly patients suffering from cancer diseases, the sample taking randomized during year 2014. Two tools were used in this study; the first includes socio-demographic characteristics (age, sex, residence, marital status and level of education). The second tool was used to assess the knowledge of cancer elderly patients about chemotherapy, side effects and prevention & control, by using true & false and multiple choice questions.*
Results: *It was found that 78% of the study participants were aged (60-<70years), while 70% were males and more than two thirds of them from rural areas. The results revealed that a highly statistical significant difference between knowledge pre-test (P= 0.000*) and immediate post-test (P= 0.000*).*
Conclusion: *the majority of the study sample in the pre-test had unsatisfactory knowledge and the majority of them had good satisfactory knowledge immediately and after 1 month of implementing of teaching program.*
Recommendations: *Teaching unit should be developed at Assiut University Hospital.*
Keywords: *Elderly, cancer, chemotherapy, teaching, program, outcomes.*

I. Introduction

Worldwide, the elderly population (age 65 years and over) were 7.6% of the total population male (227 million/ female 289 million), while in Egypt, the elderly population aged 65 years and over were 4.3% of the total population (male 1.5 million /female 1.8 million). Life expectancy increased in the world; 64.29 years for males, while 68.07 years for females, while Egyptian life expectancy increased to 69.8 years for males and 75.1 years for females **(National Center for Health Statistics, 2012).**

The U.S. population is expected to grow from 305 million in 2010 to 365 million in 2030. The total number of cancer diagnoses per year will increase from 1.6 million in 2010 to 2.3 million in 2030. In 2030, 70% of cancers will be diagnosed in the elderly. Since cancer incidence increases exponentially with advancing age, it is expected that there will be a surge in older cancer patients that will challenge both health care institutions and health care professionals **(Nathan, et al., 2013).**

Cancer is one of the top causes of death worldwide, responsible for 13 percent of all deaths in 2005. If projections are accurate, this number could reach 9 million by 2015. The chance of developing cancer increases with age; 76 percent of all cancer is diagnosed in people over the age of 50. The four most commonly diagnosed cancers breast, colon, lung, and prostate although some of the risk factors for cancer, such as age, ethnicity, and family history, smoking and alcohol intake **(National Cancer Intelligence, 2009).**

Chemotherapy is used to shrink tumors, keep tumors from spreading, or simply to help relieve pain from some of the tumors when someone is receiving comfort measures only. Chemotherapy drugs damage healthy cells as well as cancerous cells and can have severe side effects that may seem worse than the cancer symptoms themselves. These types of reactions depend on the type of agents used; some chemotherapy agents cause fewer symptoms than others **(Joensuu, 2008).**

Chemotherapy is the use of chemical drugs to kill cancer cells. It aims to provide a cure, control spread of the disease, or palliate signs of suffering. Chemotherapy works by stopping or slowing the growth of cancer cells, which grow and divide quickly. But it can also harm healthy cells that divide quickly, such as those that line the mouth and intestines or cause the hair to grow. Damage to healthy cells may cause side effects. Often, side effects get better or go away after chemotherapy is over **(National Cancer Institute, 2007).**

Nurse has a role in management of side effects, nausea and vomiting patient should avoid eating/drinking for 1-2 hrs prior to and after chemotherapy administration, eat frequent, small meals, avoid greasy and fatty foods and very sweet foods and candies, avoid unpleasant sights, odors and testes, follow a clear liquid diet, if vomiting is severe inform the physician to administer anti-emetics drugs, monitor fluid and electrolyte status, and provide frequent systemic mouth care **(Chabner and Longo, 2005).**

The gerontological nurse plays an important role in managing and teaching of chemotherapy side effects among elderly cancer patients. Some problems such as pain, nausea and vomiting are needed symptomatic relief or palliative care through effective early treatment as well as the disease. The elderly require special care for the prevention and controlling of cancers by modifying lifestyle choices, eating a healthy diet, staying physically active and steering clear of tobacco products as well as avoid their specific risk factors and preventive measures such as routine examinations and testing, early diagnoses and treatment which can increase cure rates **(Carlisle, 2013).**

Significance of the study:

Life expectancy in the number of the elderly people in the Egyptian community has increased with the improvement of the health status, and it is expected that it would be longer and so on. The number of old persons with cancer is expected to significantly increase because of the overall aging of the population and the fact that cancer incidence and mortality rise exponentially in the 50–85 year old age groups. So, we need study for elderly patients with cancer diseases to improving knowledge and practices about chemotherapy.

II. Aim Of The Study

- To investigate the effect of teaching program on chemotherapy outcomes for cancer elderly patients.

Specific objectives:

1- To assess the knowledge about chemotherapy side effects and prevention & control for cancer elderly patients.

2- To plan and implement of teaching program about chemotherapy, side effects and prevention & control for cancer elderly patients.

3-To evaluate the effect of teaching program on chemotherapy outcomes for cancer elderly patients.

Subjects and Methods

Research design: Quasi-experimental research design was used in this study.

Setting:

This study was conducted in oncology outpatient clinics (male & female) at Assiut University Hospital.

Subjects:

Type of sample: A simple random sample for this study included (50) elderly patients suffering from cancer diseases, the researcher taking the elderly patients during year 2014. The study sample groups were assessed for their knowledge about chemotherapy (pre-test), with the researcher giving of teaching program about chemotherapy, its side effects and prevention & control of them. Then assess the effect of teaching program on chemotherapy outcome immediately and after one month (post-test).

Tool of the study: The Interview questionnaire sheet; which consists of two tools, was used in this study after being developed by the researcher based on a review of relevant literature which was translated into the Arabic language. It consisted of two tools**.**

Tool 1: It included items related to socio-demographic characteristics (age, sex, residence, marital status, education).

Tool 2: It consisted of two parts, the questionnaire used to assess the knowledge of cancer elderly patients about chemotherapy, side effects and prevention & control (Pre & post-test) **Part I**: using true and false questions such as chemotherapy one type, chemotherapy has a side effect, and chemotherapy has effect on skin and nails. **Part II**: using multiple choice questions such as symptoms of anemia, symptoms of low platelet count, and how to deal with those patients.

The total score of the questionnaire sheet was (27) degree.

Scoring system:

For the knowledge items, in true and false questions and in multiple choice questions, each correct response was scored 1 and incorrect response was scored zero. For each area of knowledge, the scores of the items were summed up and the total was divided by the number of the items, giving a mean score for the area. These scores were converted into a percent score, and means and standard deviations were computed. Poor knowledge score of less than 50%, satisfactory knowledge score is 50:70% and good knowledge score is more than 70%.

III. Methods

I- Preparatory phase:

An official permission was taken from chairman of oncology department at Assiut University Hospitals to obtain his vital assistance and necessary approval to conduct the study. This letter included the nature and purpose of the study, which was briefly explained through direct personal communication.

II- Pilot study:

A pilot study was conducted to evaluate the applicability and clarity of the sheet and time needed to fulfill it. It was carried out on a sample of 10 elderly patients suffering from cancer disease drawn from the

previously mentioned setting. These 10 patients were excluded from the actual sample. According to the result of the pilot study, the necessary modifications were done.

III- Data collection Phase:

Data was collected from the first of January until the end of May 2014 to assess the knowledge of cancer elderly patients regarding chemotherapy (pre-test), after implementing of teaching program about chemotherapy the researcher assess the effect of teaching program on the chemotherapy outcome immediately and after one month. The researcher had conducted structured interviews with the study participants at oncology outpatient clinics. The program divided into three sessions, the average time taken to complete each session ranged between 20-30 minutes according to the elderly response, the minimum number of cancer elderly patients for each session five patients.

IV- Session of the program

Session	Duration	Setting	Topic	Objectives	Content	Teaching methods
First session	20-30 min	out patient clinic of oncology	Information about chemotherapy	At the end of this session each elderly patient will be able to: - identify chemotherapy. - List types of chemotherapy.	Chemotherapy and types	Booklet and discussion.
Second session	20-30 min	out patient clinic of oncology	Information about side effect of chemotherapy	At the end each elderly patient will be able to: List side effect of chemotherapy.	Side effect of chemotherapy	Booklet and discussion.
Third session	20-30 min	out patient clinic of oncology	Information about management of chemotherapy side effect	At the end each elderly patient will be able to: - Perform the management of chemotherapy side effect.	Management of chemotherapy side effect	Booklet and discussion. Demonstration.

Ethical consideration

Confidentiality of the collected information was respected and an oral informed consent was obtained from each patient who agrees to participate in the study. The researcher explained the purpose and nature of the study to each elderly participant in the study. Patients were advised of their right to withdraw from the study at any time. Patients' names were coded for data entry so that their names could not be identified.

Statistical analysis:

The obtained data were reviewed, prepared for computer processing, coded, analyzed and tabulated. Data entry was done using the computer software package, using the "Statistical Package for the Social Sciences" (SPSS) version 20.0. Data was presented using descriptive statistics in the form of frequencies and percentages, means, standard deviations, using chi-square test and unpaired t-test. Statistical significance was considered at P- value <0.05.

IV. Results.

Table (1): Socio-demographic characteristics of the study sample at Assiut University Hospital 2014.

Socio-demographic characteristics	N. (n= 50)	%
Age:		
60- <70 years	39	78.0
≥ 70 years	11	22.0
(Range)		(60 – 79)
Mean ± SD		65.02 ± 5.17
Gender:		
Male	35	70.0
Female	15	30.0
Residence:		
Rural	34	68.0
Urban	16	32.0
Marital status:		
Married	24	48.0
Widow	22	44.0
Divorced	4	8.0
Education:		
Illiterate	25	50.0
Read & write	19	38.0
Basic education/ Secondary	6	12.0

Table (2): knowledge of the study sample about chemotherapy using true and false questions

knowledge about chemotherapy	Pre-test (n=50)		Post-test Immediate		Post-test After 1 month	
	N.	%	N.	%	N.	%
Is a chemotherapy one type						
True	34	68.0	2	4.0	9	18.0
False	16	32.0	48	96.0	41	82.0
Chemotherapy has a side effect						
True	18	36.0	50.0	100.0	50	100.0
False	32	64.0	0	0.0	0	0.0
Some patients undergoing chemotherapy complain from influenza symptoms						
True	30	60.0	47	94.0	34	90.0
False	20.0	40.0	3	6.0	6	10.0
Anemia consider a one cause of dizziness						
True	5	10.0	48	96.0	46	92.0
False	45	90.0	2	4.0	4	8.0
Is a nausea one causes of loss of appetite						
True	3	6.0	45	90.0	38	76.0
False	47	94.0	5	10.0	12	24.0
Bed redden and immobility is essential						
True	30	60.0	38	76.0	36	72.0
False	20	40.0	12	24.0	14	28.0
Cancer patients less expose to bacterial infection in gum, teeth, and tongue						
True	9	18.0	49	98.0	48	96.0
False	41	82.0	1	2.0	2	4.0
Smoking increase the oral and throat problems						
True	18	36.0	49	98.0	48	96.0
False	32	64.0	1	2.0	2	4.0
Breast feeding may be accepted during period of chemotherapy administration						
True	36	72.0	50.0	100.0	49	98.0
False	14	28.0	0	0.0	1	2.0

Table (3): knowledge of the study sample about effect of chemotherapy on body system using true and false questions

	Pre-test (n=50)		Post-test Immediate		After 1 month	
	N.	%	N.	%	N.	%
Chemotherapy has effect on skin and nails						
True	13	26.0	49	98.0	48	96.0
False	37	74.0	1	2.0	2	4.0
Chemotherapy has effect on nervous system						
True	18	36.0	50	100.0	49	98.0
False	32	64.0	0	0.0	1	2.0
All chemotherapy types cause sterility						
True	14	28.0	49	98.0	45	90.0
False	36	72.0	1	2.0	5	10.0
Some types of chemotherapy leads to destruction of kidney cells						
True	10	20.0	48	96.0	46	92.0
False	40	80.0	2	4.0	4	8.0
Chemotherapy has effect on eyes						
True	22	44.0	42	84.0	39	78.0
False	28	56.0	8	16.0	11	22.0
Anemia consider one dangerous side effect						
True	18	36.0	45	90.0	38	76.0
False	32	64.0	5	10.0	12	24.0
All patients suffered from constipation						
True	30	60.0	50	100.0	47	94.0
False	20	40.0	0	0.0	3	6.0
All patients suffered from diarrhea						
True	9	18.0	49	98.0	46	92.0
False	41	82.0	1	2.0	4	8.0

Table (4): knowledge of the study sample about some aspects of psychological condition& fluid intake using true and false questions

	Pre-test (n=50)		Post-test Immediate		Post-test After1 month	
	N.	%	N.	%	N.	%
Nausea and vomiting that occurs to patient is related to psychological condition alone.						
True	45	90.0	1	2.0	3	6.0
False	5	10.0	49	98.0	47	94.0
Emotional status and depression consider one causes of loss of appetite for elderly patient.						
True	10	20.0	48	96.0	46	92.0
False	40	80.0	2	4.0	4	8.0
Shortness of hair before hair loss is important to elderly patient's psychological condition.						
True	3	6.0	45	90.0	38	76.0
False	47	94.0	5	10.0	12	24.0
Avoidance of increase fluid intake pre and during food considers one advises to patient.						
True	14	28.0	49	98.0	45	90.0
False	36	72.0	1	2.0	5	10.0
Eating immediately before chemotherapy administration considers one advises to patient.						
True	30	60.0	1	2.0	3	6.0
False	20	40.0	49	98.0	47	94.0
Cancer patients should reduce fluid intake to maintain on kidney function.						
True	38	76.0	2	4.0	4	8.0
False	12	24.0	48	96.0	46	92.0

Table (5): knowledge of the study sample about chemotherapy using multiple choice questions

Elderly knowledge	Pre-test (n=50)		Post-test Immediate		Post-test After 1 month	
	N.	%	N.	%	N.	%
Advises given to cancer patient:						
Correct	15	30.0	49	98.0	47	94.0
Incorrect	35	70.0	1	2.0	3	6.0
Symptoms of anemia:						
Correct	12	24.0	49	98.0	45	90.0
Incorrect	38	76.0	1	2.0	5	10.0
Symptoms of low platelet count- thrombocytopenia						
Correct	10	20.0	48	96.0	46	92.0
Incorrect	40	80.0	2	4.0	4	8.0
Dealing with patient has low platelet count if wound or bleeding occurs						
Correct	14	28.0	49	98.0	48	96.0
Incorrect	36	72.0	1	2.0	2	4.0

Table (6): Comparison of elderly knowledge about chemotherapy in pre-test, immediate and after 1 month post-test

Knowledge about chemotherapy	Poor		Satisfactory		Good	
	N.	%	N.	%	N.	%
Pre-test[1]	45	90.0	5	10.0	0	0.0
Immediate post-test[2]	0	0.0	0	0.0	50	100.0
After 1 month post-test[3]	0	0.0	2	4.0	48	96.0
P-value[1]	0.000*					
P-value[2]	0.000*					
P-value[3]	0.475					

* Statistical significant difference Unpaired t-test

Table (7): Relation between knowledge of the study sample about chemotherapy and socio-demographic characteristics

Socio-demographic characteristics	Pre-test (n=50)	Immediate Post-test	After 1month Post-test
	Mean ± SD	Mean ± SD	Mean ± SD
. Age: (years)			
60- <70 years	8.70 ± 2.61	22.19 ± 0.79	20.78 ± 1.31
≥ 70 years	9.48 ± 3.81	22.00 ± 0.95	21.09 ± 1.04
P-value	0.401	0.455	0.366
. Residence:			
Rural	9.21 ± 3.37	22.15 ± 0.93	20.94 ± 1.25
Urban	8.75 ± 2.91	22.00 ± 0.73	20.88 ± 1.09
P-value	0.644	0.579	0.857
. Education:			
Illiterate	8.92 ± 3.05	21.96 ± 0.89	20.56 ± 1.26
Read & write	9.21 ± 3.34	22.26 ± 0.87	21.21 ± 1.03
Basic education/ Secondary	9.17 ± 3.97	22.17 ± 0.75	21.50 ± 1.05
P-value	0.955	0.513	0.087

Unpaired t-test

Results

Table (1) shows that more than three quarters of the elderly aged between (60-<70) years, while less than one quarter of them (78%) aged 70 years and more. The age ranged between (60-79) years, the mean age ± S.D was 65.02 ± 5.17. As regards to sex less than three quarters of elderly (70%) were males while more than two thirds of the study sample (68%) came from rural areas and more than two fifths of study sample (48%) were married, while less than one tenth of them (8%) were divorced and half of them (50%) were illiterate.

Table (2) It was observed that (10%) of the study sample had correct answer about (anemia consider a one cause of dizziness for patients undergoing chemotherapy) in the pre-test, while in the same item (96%) of them had correct answer after immediate implementing of teaching program.

Table (3) displays that (20%) of the study sample had correct answer about (some types of chemotherapy leads to destruction of kidney cells) in the pre-test, while (96%) of them had correct answer after immediate implementing of teaching program.

Table (4) demonstrates that only (6.0%) of the study sample had correct answer about (shortness of hair before hair loss is important to elderly patients psychological condition) in the pre-test, while (90.0%) of them had correct answer immediate after teaching program.

Table (5) indicates that (20%) of the study sample had correct answer about (symptoms of anemia and symptoms of low platelet) in multiple choice questions before implementing of teaching program, while (92.0%) of them had correct answer after 1 month of teaching program.

Table (6) Illustrated that there was a highly significant statistical difference between two stages as regard knowledge level pre-test (P= 0.000*) and immediate post-test (P= 0.000*) and no statistically significant difference between immediate post-test and after 1 month post-test (P= 0.475) of teaching program.

Table (7) represents the relation between knowledge of the study sample and socio-demographic characteristics. It was clears that there is no statistically significant difference between knowledge of the study sample about chemotherapy and socio-demographic characteristics.

V. Discussion

Regarding the age of diseased patients, the majority of them (78.0%) aged between (60-69) years old and the rest are 70 years or more. This is might be due to limitations in activity, decreased ability to perform basic tasks, and conversely lower immunity. This finding is in agreement with **Smith, (2005)**, who reported that the frequencies of some diseases increased with advancing age, for example, the increased cumulative and carcinogens with age and the impaired capacity to repair DNA may be responsible for the higher incidence of sun-related diseases in the 75–84- and > 85-year age groups. The score of knowledge high in younger elderly than advanced age, this age might have ability for learning than older. This result is supported by **Alonson & Ferrer (2004)** who reported that with increasing age, all senses become less acute, sensory impairment increases elders' dependence on others and decreases of well-being. The same was reported in the present study which shows that health can be improved by increasing the knowledge of older adults.

The present study revealed that the number of males more than females. This may be due to the fact that males are more active in outdoor life than females, so they are affected by sun exposure, radiation, and pollution hazards, this more liable to of cancer diseases. This finding is agreement with **Anne et al. (1986)** who reported that the male incidence rates were higher than female rates for every cancer site common to both sexes.

The current study showed more than two thirds of the study sample came from rural areas and had high score of knowledge than urban. It was clear that people from rural areas had been more affected with cancer

diseases than those from urban areas, as most of the patients in the present study were farmers. This may be due to exposed to direct sunshine for longer times and nutritional inadequacy.

In the present study showed that married more than widows and divorced. while the score of knowledge high in married than single this may be the married have more experience. Unmarried have the lowest score of knowledge regarding loneliness and depression so they developed a supportive network of friends and relatives.

Regarding the educational level, in the present study it was observed that the majority of study sample were illiterate and read & write, and more than one tenth of them had basic and secondary levels of education. Those mostly related to the illiterate patients had poor knowledge about chemotherapy, side effects and prevention & control. It was mentioned in many literatures that higher education among the elders can properly identify and help be aware of the important role of social support in realizing the need for increasing contacts with mates, family members and friends in order to achieve a highly satisfying life. This finding is agreement with **Melzer et al. (2001)** stated that better educated elders can exhibit a more coping mechanisms with many stressful situations during their life. Since the highly educated had more knowledge and ability to scope with the pressures and problems in life, they could have better control and arrange their own lives, they scored higher on knowledge than the less educated. The study of **Breeze (2004)** supported this finding and added that low educational levels of the elders can lead to inadequate follow up pattern or even neglecting this important issue, which can affect in a negative way the health.

The present study revealed that the majority of elderly patients had an unsatisfactory level of knowledge about chemotherapy, side effects and prevention & control before the implementation of nursing guidelines, while the most of them had good satisfactory level of knowledge after 1 month of implementing nursing guidelines. This may be attributed to insufficient information related to chemotherapy and side effects, also this may be attributed to the lack of continuous education and in-service training programs. Advanced age was found to affect significantly the knowledge of the elderly. These results agree with **Bedell (2003)** who stated that information and patient education are fundamental for patient's experience of cancer treatment. At the same time, **Nathan (2013)** who reported that there was an important role for education of healthcare providers, the elderly and their caregivers to achieve optimal care for older patients with cancer.

In the present study, it is revealed that a great improvement in knowledge score after application of nursing guidelines of care for cancer elderly patients undergoing chemotherapy, shows that there is a statistically significant difference in elderly knowledge regarding chemotherapy and side effects on post-test immediate and after 1 month. This result is supported by **Abd-Allah (2000)** who documented that the in-service training program has a beneficial effect in improving the knowledge and skills for the elderly.

The current study showed inadequate level of total knowledge score in most items pre implementation of nursing guidelines about chemotherapy, and showed that there is statistically significant difference in the majority of post-test immediate and after 1 month. This result in line with **Benson (2004)** who documented that data collected before the implementation of program showed unsatisfactory level of knowledge about patients undergoing chemotherapy; the findings indicate that a good improvement in the mean knowledge scores after the implementation of the program.

By time after 1 month post-test, the percentages were slightly reduced. This indicates that the improvement in knowledge was partially lost after 1 month of implementation of nursing guidelines. This result might be explained by the fact that, knowledge retention is usually affected by time. This result supported by **Ades (2009)** who suggest that elderly patients may be a vulnerable population, from which valuable and sometimes lifesaving therapy is withheld.

These findings are in agreement with **Bouvier et al. (2013)** and are of great interest, since they contribute to optimize clinical practice by adhering to specific guidelines and translating this knowledge into practical recommendations. Overall, the reported results present a good adherence to the guidelines as well as for improving the quality of caring in elderly cancer patients. These results are supported by **Rayson et al. (2012)** can be a focus on preparing more effective guidelines as well as assessing their correct application in routine practice. In fact, the improvement in cancer patient care, and possibly patient cure, is the result of both therapy innovation and correct application of the best available treatments.

Oncology nurses are engaged in a collaborative practice with all members of care team to provide optimal management of patients with cancer. Cancer nurses also are continuously involved in the enhancement of nursing practices through research, continuing education, and advanced education **(Zitell et al, 2006 and Ropka &Padilla, 2007).**

VI. Conclusion

Based on the results of the present study, it can be concluded that the age ranged between (60-79) years, less than three quarters of elderly, were males while more than two thirds of them came from rural areas and more than two fifths of them were married and widowed respectively. Also, the most of them were

illiterate, reading & writing. The majority of the study sample in the pre-test had unsatisfactory knowledge and the majority of them had good satisfactory knowledge immediately and after 1 month of implementing of teaching program.

VII. Recommendations

1. Teaching class be developed in oncology outpatient clinics at Assiut University Hospital to provide continuous nursing care for cancer elderly patients undergoing chemotherapy.
2. In-service training program for all nurses and newly affected patients about the side effects of chemotherapy and nursing care for cancer elderly patients.
3. Further studies and other researches should be carried out to investigate the effect of teaching program on chemotherapy outcomes of cancer elderly patients.
4. Encouraging the elderly about the importance of follow-ups and periodical check-ups to early detect cancer diseases to prevent complication or any deterioration.
5. Utilizing the mass media such as (T.V, Radio) they play an important role in conveying health information to increase the awareness of elderly people about chemotherapy and early prevention & control of this side effects.

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