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Patients' Satisfaction Level Regarding Chemotherapy Infusion Session for Breast Cancer

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Abstract: Background: Breast cancer is a major health problem in females worldwide. About 12% or one in eight woman's at risk to develop breast cancer during lifetime. Chemotherapy produces a harmful effect of patients' well-being. Patient satisfaction is a valuable aspect of healthcare organization and it reflects on patients' outcomes. **The aim of the study:** to assess patients' satisfaction level regarding chemotherapy infusion session for breast cancer. **Methods:** A quasi-experimental research design was utilized in the current study. The study was conducted at center of radiation oncology and nuclear medicine outpatient clinic affiliated to Governments Cairo University Hospital, Egypt. **Subjects:** A purposive sample of one group of 174 adult breast cancer females undergoing first dose of chemotherapy. **Tools of data collections:** Four tools were used for data collection: 1) patients' demographic characteristics 2) Interview questionnaire sheet 3) PATSAT35 satisfaction questionnaire, and 4) A telephone follow-up call script. **Results:** revealed that, there was a highly statistically significant improvement in total knowledge and satisfaction of patients' pre and post intervention ($P > 0.001$). **Conclusion:** The current study concludes that, the implementation of the chemotherapy infusion instructions session had a statistically significant positive effect on improving patients' knowledge and satisfaction. **Recommendation:** The study recommended that, application of telephone follow-up call in the oncology setting to assist patients to overcome chemotherapy side effect, give guidance and support, and increase patients' satisfaction.

Key words: Chemotherapy, satisfaction, infusion session, breast cancer

INTRODUCTION

World health organization (WHO) 2013 reported that, breast cancer is a public health problem that is most prevalent form of cancer among females in the world. Researches mentioned that, breast cancer is the commonest cancer in females affecting more than a million females each year. It also includes 16% of all female cancers. In addition about 519,000 women who die from breast cancer annually and more new cases are found, which is estimated to be one million of women develop breast cancer each year approximately ([1], and [2]).

Breast cancer is the most common malignancy in women in the world. It is also the main cause of death from cancer among female generally. Breast cancer is the most common cancer in women in the United States. According to the American Cancer Society, expected that, up to 3.1 million women living in the United States (US) have a history of invasive breast cancer, and 232,000 new breast cancer diagnoses were expected in 2014, and ranks second overall 10.9% of all cancers [3] and [4].

Patient satisfaction is reflected a key performance sign in assessing quality of patient care and is highly obligated by accreditation agencies in the monitoring of quality of hospital care in order to identify needed care areas to improvement [5]. Patient satisfaction has become an increasingly important aspect in quality of patient care.

Patient satisfaction may promote patient's acceptance to medical treatment and affect clinical outcomes [6].

Patient satisfaction is an important issue to address in the health care field as making a patient feel safe is not the only activity that is required when caring for patient. Patient satisfaction is a factor that not only can guide care received, but it also impacts the financial support of the institution as well. Measurement and reporting of patients' experiences has become an important element of health-service evaluation worldwide [5].

Telephone follow-up calls (TFUC) are a beneficial tool to support patients after discharge from the hospital. The use of TFUC is a good strategy to satisfy patients' needs, promote patient satisfaction, and to progress healthcare services [7]. The advantages of TFUC can help to identify symptom burden and address that burden in a timely way, support patients establish better medication adherence, and address any financial challenges such as obtaining their medications or transportation issues [8], and [9].

Using a TFUC may be one strategy to improve patient satisfaction in an outpatient oncology unit. Researchers identified that, implementing of TFUC in the ambulatory oncology unit could lead to improvement in oncological symptom management, and emotional support. Providing the TFUC, creates that connection and continues support to patient after leaving of the treatment area. When

patients feel more satisfied with care provided they are more confident and experience increase centeredness in the ability to manage their care. This leads to less frightened phone calls from patients and less emergency room or unscheduled visits [10].

Patient undergoing chemotherapy can be physically and psychologically stressful. More than 50% of newly diagnosed cancer patients supposed to experience a variety of chemotherapy-related side effects including fatigue, sleep disturbance, nausea, weight loss, hair loss, and pain. This can have a significant effect on comfort and well-being during and after cancer treatment [11]. The patients are highly needed to information and instruction especially in the first session of chemotherapy. Providing an accurate information and support regarding the severity of side effects may optimistic expectation and prevent side effects from developing or becoming more severe [12] and [13].

The proportion of cancer patients reporting the instruction needs during treatment phase ranges from 11% to 97%. Providing perfect preparation information to patient before chemotherapy treatment may help address unrealistic expectation about the benefits, risk and potential outcomes of treatment. The National Cancer Patient Survey in the United Kingdom (UK) found that, the proportion of patients being given written instruction information about their cancer that was easy to understand the varied according to cancer type and trust. Increasing patient comfort and well-being during the chemotherapy infusion session is a goal of all oncology health care team. The meticulous educational and psychological preparation provided to patients and their family [14][15],[16].

Significance of the study:

In 2002, the World Cancer Report quotes breast cancer as the cause of 410 000 deaths per year in the world with more than 70% of all cancer deaths happening in low- and middle-income countries [17].

In Egypt, breast cancer estimated for 35.1% of the patients of cancer and is the most common cancer among Egyptian women; the median age at diagnosis for breast cancer is ten years younger than in the United States and Europe with just about half of the patients diagnosed under the age of 50 years [18]. Researchers reported that, from the only Egyptian population-based cancer registry in the Nile Delta region revealed a two to four times higher incidence of breast cancer and estrogen receptor-positive breast cancer in urban than rural areas [19] and [20]. In addition Gharbiah population-based cancer registry (GPCR) in Egypt, (2009) mentioned that, urban incidence of breast cancer was three to four times higher than in rural incidence [21].

Center of statistics, Faculty of Medicine, Cairo University (2017) reported that, the total number of breast cancer patients in 2017 about 10.000. 785 newly diagnosed and 385 given chemotherapy for first dose [22].

The aims of the study to assess patients' satisfaction level regarding chemotherapy infusion session for breast cancer through:

1. Assess patients' knowledge regarding chemotherapy infusion instructions (pre and post)

2. Develop and implement chemotherapy infusion instructions based on patients' needs assessment
3. Evaluate the effect of implementation of chemotherapy infusion instruction session on patients' knowledge
4. Assess and compare patient satisfaction level regarding chemotherapy infusion instructions (pre and post)

SUBJECTS AND METHODS

Research design:

A quasi-experimental research design with one group pre-test and post-test was used to conduct this study.

Research hypothesis:

This study hypothesized that:

1. Implementation of chemotherapy infusion instructions will affect positively on patients knowledge.
2. Implementation of chemotherapy infusion instructions will affect positively on patients' satisfaction.

Setting: The study was conducted at center of radiation oncology and nuclear medicine outpatient clinic affiliated to Governmental Cairo University Hospital, Egypt.

Research Subjects:

A purposive sample of one group of breast cancer female patient, undergoing first dose of chemotherapy. The sample size calculated by using Open Ebi version 3. It indicated the sample size was 174 patients based on comparing 2 mean. A power 90 %. The subject selected according to the following inclusion criteria adult female patients (≥ 18 years), undergoing first dose of chemotherapy treatment in the outpatient clinic at oncology setting, able to provide oral consent form, able to communicate via telephone. Exclusion criteria: Female patients less than 18 years, those on chemotherapy treatment that was not on first dose, unable to provide oral consent, and unable to communicate via telephone.

Tools for data collection:

Four tools were utilized to collect data to the current study. Two tools were designed by the researchers (patients' demographic characteristics, interview questionnaire sheet). Out PATSAT35 satisfaction questionnaire developed by [23]. A telephone follows up calls script, is a standardized tool, modified by the investigators.

PATIENTS' DEMOGRAPHIC CHARACTERISTICS

This tool was developed based on related literature to collect the necessary data about the study subjects. It designed by the investigators in English language, after reviewing the related current national and international literature. *The items on this tool were adopted from [24], and [25].* It includes characteristics of patients under the study such as age, marital status, living status, educational level, occupation, previous experience with any cancer treatment, chronic illness, and numbers of telephone follow up calls.

Interview questionnaire sheet: to assess patients' knowledge (pre/post):

This questionnaire was developed by the researchers in an English language based on the review of related literatures [26], [27] and, [28] to assess patients' knowledge

regarding chemotherapy infusion instructions. It included 38 true & false questions grouped into six subgroups to assess patients' knowledge regarding the following: definition and importance of chemotherapy (3 questions), preparation of patients (2 questions), infusion session (6 questions), expected side effects (10 questions), danger signs (3 questions), and nursing role (14 questions).

Scoring system:

The assessment of patients' knowledge consisted of 38 questions; the responses for the questions were by true & false. The correct answer was given (1 grade), the incorrect answer was given (zero), the total grade for the knowledge questionnaire was (38 grades), the total scores for every subgroup were calculated, and then the total score for the entire questionnaire was calculated for every patient. The satisfactory level of knowledge was $\geq 50\%$.

Out PATSAT35 satisfaction questionnaire:

This tool was used to assess patients' satisfaction regarding chemotherapy infusion instructions session before and after the implementation. It was a standardized tool adopted from [23]. The OUT-PATSAT 35 questionnaire has been a widely used to address patient satisfaction and is a reliable and valid instrument. It consisted 35 items in five subgroup related to patient satisfaction regarding the following: doctor (11 items), nurse (11 items), chemotherapy care (6 items), services (6 items), and overall satisfaction (1 item). The patients' response on a five-Likert scale, poor, fair, good, very good, or excellent.

Scoring system:

The patient were asked to rate their responses on a five-Likert scale ranged from 5=excellent to 1=poor. The total score for the whole evaluation scale was calculated for every patient. Then, the mean of the total score for all patients' was calculated.

A telephone follows up call script:

This tool developed by [10], and modified by the researchers'. It provides ongoing support and maintains contact with patient. It consisted of 10 questions regarding patients' needed questions and clarification regarding first dose of chemotherapy.

Scoring system:

The patient were asked to rate their responses either yes or no. It calculated by number and percentage.

Tools validity and reliability:

- These questionnaires were reviewed by a panel of 3 experts (1 medical oncology faculty of Medicine, Cairo University, 2 professors in medical surgical nursing department, Cairo University) to evaluate its face and content validity. The experts reviewed the tools for its content, clarity, simplicity, relevance, comprehensiveness, appropriateness, and applicability. Minor modifications were done and then the final forms of the tools were developed.
- Testing the reliability of the purposed data collecting tools was done by alpha Cronbach test which was 0.92 for the knowledge tool, and 0.85 for a telephone follows up call script.

Pilot study:

A pilot study was carried out on 10% randomly selected patients (10%) to test clarity, feasibility, objectivity and internal consistency of the study tools, and estimate the need time to complete each tool. In addition modified needs assessment for patients and the content of infusion instruction session based on patients' needs. Needed modifications were done in data collection tools and subjects included in the pilot study were excluded from the main study subject.

Ethical considerations:

An official permission letter was obtained before conduction of the study from the Medical and Nursing Director of the center of radiation oncology and nuclear medicine outpatient clinic affiliated to Governments Cairo University Hospital. Participants in the current study were voluntary. Oral consents were obtained from patients who met the inclusion criteria. The researchers-maintained anonymity and confidentiality of subjects' data. Patients' were informed that they could withdraw from the study at any time without penalty.

Procedure:

The procedure included three phases: preparatory phase, implementation phase, and evaluation phase.

Preparatory phase:

This phase involved extensive reviewing of the current related literatures to develop tools for data collection and prepare some brochure related to chemotherapy infusion instructions based on patients' needs assessment. Adopted from [29], [30], and [31]. The researchers developed the session about chemotherapy infusion instructions which were revised for content validity by a group of 3 experts (1 medical oncology faculty of medicine, Cairo University, 2 professors in medical surgical nursing department, Cairo University) and the final modifications were done based on the opinions of the experts. The aim and purpose of the study was explained by the researchers to the study subjects prior to data collection, as well as their approval to participate in the study was obtained

Implementation phase:

The tools of data collection were distributed to the patients to answer it and completed by the researchers through interview (pre and post test, patient satisfaction). To assess patients' base line knowledge and satisfaction regarding first dose of chemotherapy infusion instructions. The time of each sheet calculated. Patients' demographic characteristics sheet 5 minutes, interview questionnaire (10 minutes), and Out PATSAT35 satisfaction questionnaire (15 minutes). The chemotherapy infusion instructions session were conducted for patients at center of radiation oncology and nuclear medicine outpatient clinic at Governmental Cairo University Hospital, Egypt. The investigators were explaining one session to group (4-5) patients' daily. This repeated 5 days a week from 9- 1.00 pm during data collection period. The session takes 30 minutes using prepared brochure to facilitate patients understanding, and keep the instructions with them and telephone number if any questions. The chemotherapy instructions session include the following items. Definition and importance of chemotherapy, preparation of patients, infusion session, expected side effects, danger signs, and nursing role. During the session

the researchers' give time to patient asking question of need any clarifications. At the end of each session, the researchers' takes patient phone number and give their number to follow up care from the giving first dose. The investigators' fill a telephone follows up call script for each patient and answer questions according to their needs. The investigators fill the post test and satisfaction questionnaire for each patient in the outpatient clinic before the second dose of chemotherapy session. The process of data collection and instruction sessions was carried out from the beginning of July 2017 to the end December 2017 over a period of six months.

Evaluation phase:

Post implementation of the chemotherapy infusion instructions session, all tools were filled in again before the second dose of chemotherapy infusion immediately. Evaluations of the effect of the chemotherapy infusion instructions session was done by comparing the results of patients' knowledge and satisfaction pre and post the implementation of chemotherapy infusion instructions session by using the same data collection tools.

Statistical analysis:

Data was analyzed using a statistical package for social science software (SPSS) version 22 for Windows; mean, standard deviation, number & percentage, t- test; probability level was set at $P \leq 0.05$ for all tests.

RESULTS

Table(1):Demographic characteristics for studied patients' (n=174):

Items	No.	Percent%
Marital status:		
Single	48	27.6
Married	105	60.3
Divorced	12	6.9
Widow	9	5.2
Age (years):		
18-<2:	34	19.5
24-<4:	65	37.4
44-<6:	75	43.1
	44.3±15	
Occupation:		
House wife	86	49.4
Employed	74	42.5
Retired	14	8.1
Educational level		
Educated	85	48.9
Read and write	44	25.3
Illiterate	45	25.8
Living status:		
Alone	20	11.5
With family	154	88.5
Previous experience with any cancer treatment:		
Yes	0	0.0
No	174	174.0
Chronic illnesses:		
DM	24	13.8
HTN	75	43.1
Cardiac	30	17.2
Renal	5	2.9
Hepatic	0	0.0
Others	0	0.0
Number of telephone calls:		
Once	39	22.4
Twice	67	38.5
Three time	53	30.5
More than 3	15	8.6

Table (1) represents that 60.3% of patients under study were remarried, and 43.1% of them were aged from 45-65 years old with mean of age 44.3±15.5. In addition, 49.4% of studied patients were housewife, 48.9% were educated, and 88.5% were live with their family. 100.0% of studied patients have

no experience with any cancer treatment. 77% have chronic diseases (DM, HTN, Kidney disease, and cardiac disease). The majority 77.6 % of patients' has telephone follow up call more than once.

Table (2): Satisfactory level scores of knowledge in studied patients' pre and post intervention (n=174):

Items	Pre		Post		t-test	p-value
	No.	%	No.	%		
• Definition& importance of Chemotherapy	90	51.7	155	89.1		
• Preparation of patient	53	30.5	164	94.3		
• Infusion session	64	36.8	167	96.0		
• Side effects	82	47.1	154	88.5		
• Danger signs	55	31.6	170	97.7		
• Nursing role to overcome the side effects						
A- Bone marrow disturbance	45	25.9	168	96.6		
B- Nausea and vomiting	59	33.9	158	90.8		
C- Alopecia	42	24.1	168	96.6		
D- Neuropathy	44	25.3	170	97.7		
Total satisfactory	41	23.6	152	87.4		
Mean ±SD	19.4±5		29.2±5.2		17.9	0.0001**

*** (HS) statistically highly significant at p<0.001*

Table (2): represents that, the total satisfactory level scores regarding patient's knowledge in pretest was (23.6 %) with mean grades 19.4±5, while in post test become (87.4%) with mean grades 29.2±5.2 and the p value of compared

mean was 0.0001 which reflect a highly statistically significant improvement in patients level scores of knowledge.

Table(3):Satisfaction level mean score in studied patients'pre and post intervention (n=174):

Item	Pre	Post	t-test	p-value
Satisfaction with doctor	21.6±2.6	44.7±6.7	42.4	0.0001**
Satisfaction with nurse	21.7±2.5	45.1±6.4	44.9	0.0001**
Satisfaction with chemotherapy care	9.8±2.9	24.1±2.4	50.1	0.0001**
Satisfaction with ambulatory services	9.6±3.1	24.4±2.4	49.79	0.0001**
Satisfaction overall	2.1±1.1	3.8±0.7	17.19	0.0001**
Total	64.8±6.0	142.2±9.1	93.66	0.0001**

*** (HS) statistically highly significant at p<0.001*

Table (3): shows that a highly statically significant difference in patient's satisfaction level regarding all diminutions of care (doctor, nurse, chemotherapy care,

ambulatory services, and as overall) between pre and post patients' instruction sessions

Table (4): Follow up telephone call script for studied patients regarding chemotherapy infusion instructions (n=174)

Items	Yes		No	
	No.	%	No.	%
1. Do you have any explanation or instruction regarding your medication?	164	94.3	10	5.7
2. Do you have any question regarding instructions given during the session?	84	48.3	90	51.7
3. Do you have your follow up appointments?	174	100	0	0.0
4. If you have any question regarding your treatment, you find someone to answer?	153	87.9	21	12.1
5. Do you have any question regarding your care?	92	52.9	82	47.1
6. Do you know the warning signs you should call the doctor?	157	90.2	17	9.7
7. Do you have the needed answering for your question regarding care?	167	96.0	7	4.0
8. Do you feel comfort and support during the call you received?	174	100	0	0.0
9. Was the punctuality appropriate in answering question?	174	100	0	0.0
10. Do you have a chance to contact with the supported person any time by phone?	156	89.7	18	10.3

Table(4):In this table 100% of the patients have a follow up appointment, feel comfort during phone call, and find that the punctuality was approp in answering the question.

While about 50 % have questions regarding instructions given in the sessions, and questions regarding care.

Table (5): Missed need patients verbalized during follow up telephone call (n=174)

Questions	No.	%
1- Will I lose all my hair?	134	77.0
2- Is my lost hair will grow again?	147	84.5
3- Can I share in a sexual relation with my husband?	145	83.3
4- Is there any possibility of infection for him during intercourse?	138	79.3
5- Is the menstruation will come normally?	124	71.3
6- After the cessation of treatment is the menstruation will be normal again?	128	73.6
7- Can I make my house duties for my children as normal with the treatment regimen?	160	92.0
8- After cessation of treatment, will I return as normal before treatment?	167	96.0

Table (5): reveals that, 92% of the studied patients' were asking about if they could make the house duties as normal or not. While about 75% asking about if she will lose all her hair, is there any possible infection transmission for her husband during relation, is the menstruation will come normally, and after the cessation of treatment is the menstruation will be normal

DISCUSSION

Millions of women in the world become victims of breast cancer and undergo a stressful phase of chemotherapy. When the patients are not prepared properly for chemotherapy, they imagine a least favorable outcome of this therapy. As a result, they probably make the anticipation more difficult than the actual event **Borsellino, and Young, (2011)[32]**. The present study aimed to assess patients' satisfaction level regarding chemotherapy infusion session for breast cancer. Discussion of the findings in the current study covered the main areas; demographic characteristics of the studied patients', patients' satisfactory level of knowledge, patient satisfaction regarding chemotherapy infusion instructions session, and telephone follow up call.

Regarding demographic characteristics of the studied patients, the finding of the current study showed that, the study subject was one group of females with breast cancer undergoing first dose of chemotherapy; in relation to age, it was obvious that the mean age of the studied patients were 44.3 ± 15.5 . The previous finding is in agreement with **Stapleton et.al (2011)[17]** in their study of patient-mediated factors predicting early- and late-stage presentation of breast cancer in Egypt. They mentioned that the mean age of their study subject was 49.24 ± 10.93 . The previous finding is contradicted with **Mohamed (2016)[3]** in her study of effects of exercise intervention on pain shoulder movement, and functional status in women after breast cancer surgery: a randomized controlled trial. She stated that, the mean age of patients in her study was 45.5 ± 3.6 years.

Regarding marital status, more than half of the studied patients were married. In relation to occupation, this study clarifies that, less than half of studied patients were employees, and the majority of them were housewife and retired. The previous finding is in agreement with **Beaver, et al. (2016)[33]** in their study of exploring patient experiences of neo-adjuvant chemotherapy for breast cancer. They

mentioned that, the majority of females in their study subject were married, and less than half of them were employees.

Concerning level of education, this study revealed that about half of patients' were educated. In addition, slightly half of the studied patients were illiterate and read & write only. From the investigators point of view, the interpretation of the previous finding may be because the level of education of studied patients is very limited; they have lack of knowledge regarding chemotherapy infusion instructions. As regards to living status, the majority of studied patients were live with their family. This means they were adequate support for their family to overcome of this disease. In relation to previous experience with any cancer treatment, none of studied patients had any cancer treatment before. From the investigators point of view the studied patients were highly need for chemotherapy infusion instructions session because this was a new experience for them, they were highly need to gain accurate information to overcome of side effect of chemotherapy treatment. In addition, they need psychological support in this very stressful phase from their life. The previous finding is with in agreement with **Williams, and Schreier (2004)[34]** in their study of the effect of education in managing side effects in women receiving chemotherapy for treatment of breast cancer. They stated that, there are many studies, which have demonstrated the importance of patient's education before the first cycle of treatment. In addition, many researches demonstrated that teaching the patient about chemotherapy can minimize its side effects, reduces the distress associated with symptoms and improves the quality of life. The previous finding is in the same line with **Berglund, et al. (2015)[35]** in their study of nurse-led outpatient clinics in oncology care-patient satisfaction, information and continuity of care, they mentioned that, having access correct information regarding chemotherapy care leads to decrease patients level of anxiety and improve quality of life. Concerning chronic illness, about 3 quadrat of studied patients had chronic illness. From the researchers' point of view those patients were liable more side effect to chemotherapy because they had a chronic illness.

Regarding number of TFUC, the finding of this study, showed that, the majority of the studied patients' needed TFUC more than one. This clarified that; the studied patients may need more clarification regarding the chemotherapy and its side effects. In addition, they were anxious and afraid from the occurrence of side effect. The previous finding is in agreement with **Nader, et al. (2012)[36]** in their study of Nurses' attitude to patient education

barriers in educational hospitals of Urmia University of Medical Sciences. They mentioned that, the patients were live in anxiety because of unknowns of chemotherapy and its side effects. So the awareness about the chemotherapy plays a vital role in completion of treatment plan by the patient. In case of occurrence of side effects, early intervention can stop the progress of these effects and thus delay in the treatment can be avoided. The previous finding within the same line with **FeSchroeder, et al. (2013)[37]** in their study of empowering individuals to self-manage chemotherapy side effects. They stated that, instructing patients on side-effect management and behavioral strategies can decrease health-related distress, increase coping, reduce anxiety, and promote self-care.

Concerning satisfactory level of knowledge in studied patients', the finding of the present study showed that, there is a highly statistically significant improvement between the patients' total mean scores of knowledge pre and post intervention regarding chemotherapy infusion instructions session ($p < 0.001$). It contains (definition and importance, preparation of patient, infusion session, side effects, danger signs, and nursing role to overcome the side effects).

According to the researchers' point of view, the previous findings showed that, improvement in patients' knowledge could be attributed to the effect of the infusion instructions session implementation only, since the baseline knowledge was the same (the same group). The infusion session gave them the basic knowledge regarding chemotherapy instructions. Especially this is the first dose and the patients do not have any previous knowledge.

The previous finding is in agreement with **Valenti, (2014)[38]** in his study of chemotherapy education for patients with cancer: A literature review. He stated that, patient education through one-on-one discussion, telephone call were included in the literature review to considered the best method of providing education to patients about chemotherapy. In addition minimize patient anxiety.

The previous finding is in agreement with **FeSchroeder, et al. (2013)[37]** in their study of empowering individuals to self-manage chemotherapy side effects. They mentioned that there was statistically significant difference in pre and post test mean scores of knowledge in all items in education session regarding first dose of chemotherapy and its side effect ($p < 0.001$). The previous finding with in a same line with **Garcia (2014) [39]** in her study of the effects of education on anxiety levels in patients receiving chemotherapy for the first time: an integrative review, in Northwest Indiana. She mentioned that, there was statistically significant improving, for patient education regarding the first chemotherapy cycle was effective at decreasing anxiety.

As regards to satisfaction level in studied patients', the finding of the current study clarified that, there is a highly statistically significant improvement between the patients' total mean scores of satisfaction pre and post intervention regarding doctor, nurse, chemotherapy care, ambulatory services, and overall satisfaction. The

interpretation of the previous finding may because those patients feel comfort and interested from health care team during instruction session. The health care team give them chance to ask questions and clarifies the important items. The previous finding with in coherence with **Warmack, (2017)[10]** in her study of impact of a telephone call on patient satisfaction in adult oncology patients in Chicago. She clarified that, when comparing the two groups, patients' satisfaction was greater in patients received TFUC as compared to patients did not receive TFUC calls (No TFUC) in each category. This clarified that there was a statically significant improvement between the two group regarding satisfaction in all categories (doctor, nurse, ambulatory services, and overall satisfaction).

The previous finding is in coherence with **Beaver et al. (2011) [40]** in their study of colorectal cancer follow-up: Patient satisfaction and amenability to telephone after care. They stated that, high levels of satisfaction with the care delivered by colorectal nurse specialists and patient acceptance of telephone follow-up calls.

In relation to telephone follow up call for studied patients', the finding of this study revealed that, all patients had a follow up appointment, feel comfort and support during phone call, and they found the punctuality to answer their questions. In addition the majority of patients had instructions regarding their medications, had questions and found someone to answer their questions, they know the warning signs and when should call the doctor, they had the needed answer regarding their care, they able to contact with the supportive person by phone. The interpretation of the previous finding may because the patients found TFUC and the supportive person (doctor, nurse) available to guide them regarding the first dose of chemotherapy infusion. In addition there are individual differences not all patients suffer from the same side effects at the same time. TFUC is individualized and support patients regarding their condition. Also the patients feel afraid and continues asking are this symptoms were normal with my treatment and condition. Researches supported that, patients follow up after treatment also is a very important corner in patient satisfaction to evaluate the patients' understanding of education materials. In addition following up on a patient's condition by telephone after discharge is rapid and cost-effective in explaining their physical and psychosocial concerns thus improving their quality of life (**Tan, and Lang, 2014)[41]** The previous finding is in agreement with **Beaver, et al. (2009)[42]** in their study of comparing hospital and TFUC after treatment for breast cancer: randomized equivalence trial, in west England, They reported that, the females in the TFUC group were higher level of satisfaction than those attending outpatient clinic ($p < 0.001$).

The finding of this study revealed that, TFUC helped clarify some of the 'missed needs' that were not addressed completely in the infusion instructions session. The near most of patients during TFUC still having questions about their treatment and their regular life, which indicate the importance of TUC. The majority of patients asking regarding if they able to give care regarding their children did the housework activity during the treatment regimen. In

addition the majority of them were asking about the return to normal activity after the treatment. The majority of patients were asking in relation to the growing of their hair after treatment, sharing sexual relation with their husbands, possibility of infection by cancer to their husband during intercourse. The previous finding is in the same line with **Beaver, et.al. (2016)[43]**. They stated that TFUC of patients received chemotherapy will help them to understand the knowledge obtained from the previous visit to physician and will also help in compilation of a list questions raised regarding the future aspects of their treatment.

The previous finding with in agreement **Beaver, et al. (2009)[42]** In their study of comparing hospital and telephone follow-up after treatment for breast cancer: randomized equivalence trial, in west England, They stated that, patient satisfaction to structured telephone intervention was importantly higher as compared to hospital follow-up.

CONCLUSION

The results of this study concluded that the implementation of the chemotherapy infusion instructions session had a statistically significant positive effect on improving patients' knowledge related to (definition & impotence of chemotherapy, preparation of patient, infusion session, side effects, danger signs, and nursing role to overcome of side effects). In addition improving patients' satisfaction related to (doctor, nurse, chemotherapy care, ambulatory services, and overall satisfaction).

RECOMMENDATIONS

The current study recommended that:

- Application of TFUC in all oncology setting to assist patients with proper information, guidance and support
- Patients instructions session is recommended to all oncology patients to explain the protocol of care, side effect of chemotherapy, and facilitate patients cooperation
- Application of the current study in large probability sample to validate the result
- Using nursing navigator system to support breast cancer patients during chemotherapy treatment.

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