

# Assessment of Physical Problems Related to Chemotherapy among Patients with Cancer in Al-Najaf City

ImanQasimKteo Al-hussein, M.Sc. \*, Dergham M. Hameed, Ph.D. \*\*

\*M.Sc.Adults Nursing, Faculty of Nursing, University of Kufa.

\*\*AssistProfessor, Adult Nursing Branch, Faculty of Nursing, University of Kufa.

**Abstract- Objective:** this study aimed to assess physical problems related to chemotherapy among patients with cancer and to find out the relationship between Sociodemographic data of patients with cancer who receive chemotherapy and their physical problems. **Methodology:** A descriptive study was carried out in the Middle Euphrates Cancer Center / at Al-Najaf City. The study started from November 15<sup>th</sup>, 2015 to June 26<sup>th</sup>, 2016, in order to assess the physical problems related to chemotherapy for cancer patient who receiving chemotherapy and find out the relationship between socio-demographic data for Cancer patients who receive chemotherapy and their physical problems. A non-probability (purposive) sampling technique was used consisting of (101) Patient (99 female patient and 2 male patient) with breast cancer under chemotherapy treatment. Developed questionnaire was implemented by the researcher that consists of three parts including, part I: Demographic characteristics, part II: Clinical data and part III: physical problems related to chemotherapy. **Conclusion:** The socio-demographic characteristics have no influence on reduction or increasing of the physical problems resulting from toxicity of the chemotherapeutic agents of. **Recommendation:** The study recommend to conducting and developing oncology research that may contribute in reducing physical problems of cancer patient after receiving chemotherapy.

## I. INTRODUCTION

Cancer is considered as a main problem among people globally. Recently, 1: 4 die in the USA due to this disease. Recent studies show that this disease is the 2<sup>nd</sup> important reason of death<sup>(1)</sup>. Cancer can be treated with different methods such as radiotherapy, surgery, and chemotherapy. The Surgery and radiotherapy are used as a local treatment to kill or remove small tumors or to reduce the size of large tumors<sup>(2) (3)</sup>. The chemotherapy is primarily used to treat systemic disease. It is antineoplastic agent that is used for treating cancer diseases, by interfering with the cell function that leads to kill the cancer cell or inhibits their growth or to extend the life of critical conditions affected with this disease by decreasing the pain and other symptoms that affect the consistency of the life and keep their spirit up<sup>(4)(5)</sup>. The impact of chemotherapy relays on cancer type and stages level of disease. Chemotherapy has recognized advantage in many types of cancer such as (Breast, colorectal, pancreatic osteogenic sarcoma, testicular, ovarian, and lung) cancers<sup>(6)</sup>. In addition to the benefit of the cytotoxic agent by their

killing the malignant cells can also damage the normal cells that are spilt rapidly which is lead to many physical problems. These cells are like those which are present in the oral cavity, lower digestive system, or the cells that are responsible for the growth of the hair. Damage to healthy blood cells can lead to tiredness and easily exposure to disease. The toxicity of chemotherapeutic agent can injure the healthy cell of the mucous membrane via the body, e.g. cells that present in the mouth and GIT. That can cause lesion of the mouth, diarrhea, nausea, vomiting, and other problems of GIT. In regard to cell skin reaction at the root and follicles which may cause falling of the hair, cancers can have different way of response to toxicity of chemotherapeutic drugs and there is possibility of complication<sup>(7)(8)</sup>.

## II. METHODOLOGY

Descriptive design (Quantitative) was adopted in the current study to assess the physical problems related to chemotherapy for patients affected with cancer. The research was carried out at Al-Najaf City/ Health Directorate of Al-Najaf Al-Ashraf / Middle Euphrates Cancer Center. The study was carried out from November 3<sup>rd</sup>, 2015 up to July 3<sup>rd</sup>, 2016. A non-probability (purposive) sampling technique was used consisting of (101) patient (99 female patient and 2 male patient) with breast cancer under chemotherapy treatment who were selected from Middle Euphrates Cancer Center. An assessment tool was adopted and developed by the researcher to assess the physical side effect of chemotherapy. The complete instrument of the study consists of (3) parts (Appendix D):

**Part I: Socio-demographic Characteristics:** consists of (7) items, including gender, age, and marital status, level of education, occupational status, residency, and socio-economic status. In the socio-economic status, the researcher uses the Socio-Economic status Scale (SES) to clarify the level of participant's socio-economic status in term of Sufficient, barely sufficient, and insufficient.

**Part II: Clinical Characteristics:** consists of (13) items, including previous admission, history of chronic illness, history of past oncological treatment, past family history of oncological disease, primary cancer site (from patient report), stage of disease at diagnosis, WHO performance status scores, Current drugs (extracted from records), Dose that includes single and combination dose, method of taking treatment, last treatment session at clinic (patient report), number of chemotherapy sessions, and body surface area.

**Part III: Physical Effect Domain:** consists of (10) sections of physical side effect: The rating of items is 3 points of likert scale which rate the domain of physical problems as (1) for always, (2) for sometimes, and (3) for never in all items.

The questionnaire validity faces validity for the initial developed instrument which is specified through panel of (17) experts. And the reliability coefficient for the domain of the Breast cancer patients 'physical problems were (0.941).

The data collection was carried out from Feb 15<sup>th</sup>, 2016 to March 20<sup>th</sup>, 2016. The data collection was done through the developed questionnaire which was adopted from another article<sup>(9)</sup>, and by interview technique with the subjects as they were individually interviewed in the same way by using the similar questionnaire for the subjects of the study sample at the Middle Euphrates Cancer Center.

**Table (1) Summary of the Sample of the Study via their Socio-Demographic Characteristics**

Socio-demographic data	Items	Freq.	%
Gender	Male	2	2
	Female	99	98
	Total	101	100
Age / years	<= 40	27	26.7
	41 – 53	44	43.6
	54 – 67	24	23.8
	68+	6	5.9
	Total	101	100
Marital Status	Marriage	78	77.2
	Single	6	5.9
	Divorced	1	1.0
	Widow	12	11.9
	Separated	4	4.0
	Total	101	100
Level Of Education	Illiterate	29	28.7
	Able to Read and Write	18	17.8
	Primary School Graduate	15	14.9
	Intermediate School Graduate	15	14.9
	High School Graduate	10	9.9
	Institute and College Graduate	14	13.9
	Total	101	100
Occupation	Student	1	1.0
	Government Employee	15	14.9
	Retired	5	5.0
	Self-Employee	4	4.0
	House Wife	76	75.2
	Total	101	100
Economic Status	Sufficient	24	23.8
	Barley Sufficient	54	53.5
	Insufficient	23	22.8
	Total	101	100
Housing	Urban	75	74.3
	Rural	26	25.7
	Total	101	100

Freq= Frequency, %= Percent.

This table shows that the majority of the study sample are female (98%), within the second age group (41-53) years old (43.65), married (77.2%), illiterates (28.7%), housewives

(75.2%), barely sufficient socio-economic status (53.5%), and urban residents (74.3%).

**Table (2) Summary of the Study Sample by their Physical Problems**

No	Physical problems	Mean	Assessment	Total M.S	Overall assessment
<b>Respiratory system</b>					
1.	Suffer from repeated infections of the tonsils	2.59	L	2.37	L
2.	Suffer from repeated infections of the pharynx	2.63	L		
3.	Suffer from recurrent chest infections	2.52	L		
4.	Suffering from cough	2.28	L		
5.	Suffer frequent sputum	2.168	L		
6.	Experiencing difficulty in breathing	2.37	L		
7.	Allergic	2.08	M		
<b>Gastrointestinal tract</b>					
8.	Suffering from abdominal pain	1.73	M	1.92	M
9.	Suffer from burn in the stomach	1.95	M		
10.	Suffer from mouth ulcers	1.94	M		
11.	Suffer from nausea	1.57	H		
12.	Suffering from diarrhea	2.41	L		
13.	Suffer from weight loss	1.95	M		
14.	Suffer from loss of appetite	1.52	H		
15.	Suffering from vomiting	2.00	M		
16.	Suffer from the change in taste	1.54	H		
17.	Suffer from constipation	2.68	L		
<b>Nervous system</b>					
18.	Suffer from a lack of physical activity	1.20	H	1.59	H
19.	Peripheral neuropathy	2.18	M		
20.	Suffer from numbness in the upper and lower extremities	1.35	H		
21.	Suffering from a muscle spasm	2.00	M		
22.	Suffer from chills	1.68	M		
23.	Suffer from headaches	1.35	M		
24.	Suffer from lack of ability to concentrate	1.42	M		
<b>Musculoskeletal</b>					
25.	Suffer from back pain, bone and joints	1.44	H	1.89	M
26.	Suffer from Easily bone fractures	2.89	L		
27.	Suffer from muscle weakness (fatigue)	1.26	M		
28.	bone marrow suppression	1.99	M		
<b>Cardiovascular</b>					
29.	Suffer from palpitations	2.08	M	2.47	L
30.	Suffer from hypertension	2.79	L		
31.	Suffer from the pain center of the chest and spread to the neck, shoulder and arm	2.55	L		
<b>Blood</b>					
32.	Suffer from fatigue without effort	1.16	H	2.26	M
33.	Suffering from bleeding in the nose (epistaxis)	2.95	L		
34.	Hemorrhagic cystitis	2.99	L		
35.	Suffering from congestion of the face	2.19	M		

36	Suffer from exposure to infections easily	2.05	M		
<b>Endocrine</b>					
37	Suffer from the lunar face and obesity behind the neck, abdomen and shoulders	2.30	M	2.59	L
38	Suffer from high blood sugar	2.89	L		
<b>Genitourinary</b>					
39	Suffer from erectile dysfunction (impotence)	1.84	M	2.37	L
40	Suffer from a lack of sexual desire	1.84	M		
41	Suffer from exposure to genital urinary tract infections	2.47	L		
42	Suffer from pain in the bladder	2.71	L		
43	Suffer from pain in the genital area	2.80	L		
44	Experiencing difficulty in urination	2.56	L		
<b>Skin</b>					
45	Suffer from delayed wound healing	2.59	L	2.33	M
46	Suffering from acne	2.70	L		
47	Suffer from hair loss	1.26	H		
48	Suffer from facial redness and pimples	2.30	M		
49	Suffer from changing the strength of hair	1.20	H		
50	Suffering from tumors of the skin	2.92	L		
51	Suffers from the appearance of hair in unwanted areas in the body	3.00	L		
52	Suffer from skin infections	2.79	L		
53	Suffer from severe sensitivity to sunlight	2.17	M		
54	Mucositis	2.90	L		
55	hand – foot syndrome	1.87	M		
<b>Vision</b>					
56	Suffer disturbances of vision	1.85	M	2.07	M
57	Experiencing pain eye and eye socket	2.30	M		

N (101), low effect (mean of score 2.34 and more), moderate effect (mean of score 1.67-2.33), high effect (mean of score (1-1.66), cut off point (0.66), H=high effect,

M=moderate effect and L=low effect.

This table shows that the overall assessment of physical problems after chemotherapy is low effect (there is no physical problems) at the respiratory, cardiovascular, and endocrine systems (mean of scores equal or more than 2.34). While at the

nervous system the overall assessment is high effect (mean of scores less than 1.67), and moderate effect physical problems at the remaining systems (mean of scores (1.67-2.33)).

**Table (3) Relationship between Socio-Demographic Data with Overall Assessment of Physical Problems.**

Socio-Demographic Characteristics	Items	physical problems (Binned)			Sig.
		Low effect	Moderate effect	High effect	
Gender	Male	0	1	1	p-value (.518) NS
	Female	2	79	18	
Age	<= 40	0	22	5	p-value (0.639) NS
	41 – 53	2	33	9	
	54 – 67	0	21	3	

	<b>68+</b>	<b>0</b>	<b>4</b>	<b>2</b>	
<b>Marital Status</b>	<b>Marriage</b>	<b>2</b>	<b>61</b>	<b>15</b>	<b>p-value (.977) NS</b>
	<b>Single</b>	<b>0</b>	<b>5</b>	<b>1</b>	
	<b>Divorced</b>	<b>0</b>	<b>1</b>	<b>0</b>	
	<b>Widow</b>	<b>0</b>	<b>9</b>	<b>3</b>	
	<b>Separated</b>	<b>0</b>	<b>4</b>	<b>0</b>	
<b>Level of Education</b>	<b>Illiterate</b>	<b>1</b>	<b>22</b>	<b>6</b>	<b>p-value (.693) NS</b>
	<b>Able to Read and Write</b>	<b>1</b>	<b>14</b>	<b>3</b>	
	<b>Primary School Graduate</b>	<b>0</b>	<b>12</b>	<b>3</b>	
	<b>Intermediate School Graduate</b>	<b>0</b>	<b>14</b>	<b>1</b>	
	<b>High School Graduate</b>	<b>0</b>	<b>6</b>	<b>4</b>	
	<b>Institute and College Graduate</b>	<b>0</b>	<b>12</b>	<b>2</b>	
<b>Occupation</b>	<b>Student</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>p-value (.948) NS</b>
	<b>Government</b>	<b>0</b>	<b>11</b>	<b>4</b>	
	<b>Retired</b>	<b>0</b>	<b>5</b>	<b>0</b>	
	<b>self-employed</b>	<b>0</b>	<b>3</b>	<b>1</b>	
	<b>House wife</b>	<b>2</b>	<b>60</b>	<b>14</b>	
<b>Economic state</b>	<b>Sufficient</b>	<b>0</b>	<b>21</b>	<b>3</b>	<b>p-value (.190) NS</b>
	<b>Barley sufficient</b>	<b>2</b>	<b>38</b>	<b>14</b>	
	<b>Insufficient</b>	<b>0</b>	<b>21</b>	<b>2</b>	
<b>Housing</b>	<b>Urban</b>	<b>2</b>	<b>59</b>	<b>14</b>	<b>p-value (.702) NS</b>
	<b>Rural</b>	<b>0</b>	<b>21</b>	<b>5</b>	

N (101), low effect (mean of score 2.34 and more), moderate effect (mean of score 1.67-2.33), high effect (mean of score (1-1.66), cut off point (0.66)

This table shows that there is a non-significant relationship between the patients' physical problems and their demographic data at p-value more than 0.05.

### III. DISCUSSION OF THE RESULT:

#### Part-I: Discussion of the study sample demographic data:

According to (Table 1) in the results, the study shows that the majority of the research sample are female. This result matches with the result of the study done by Al-Wasiti in (2015)<sup>(10)</sup> who found in his study that the majority of the study subject's sex are female. In addition to that women may be at high risk to gain breast cancer than men.

Concerning their age, the majority of the research subjects are at age group of (41-53) yrs. which is in consistency with Al-Isawi, (2016)<sup>(11)</sup> who mentioned that the common age of research sample is at age group of (41-50). So the predisposing factors of malignant disease may elevate at the increasing of age.

Regarding marital status, the highest number of the study subjects are married, it comes with the research of Alwan, (2014)<sup>(12)</sup> she stated that the highest percentage of her study subject are married.

Relative to the educational status, the present study shows that most of study sample are illiterate. It comes with the study of Abbas, (2013)<sup>(9)</sup> who mentioned that the majority of study sample level of education are illiterate.

About the study sample occupation the majority of the present study are housewives. Which is in consistency with Ibrahim and Ali, (2012)<sup>(13)</sup> in their thesis estimated that the majority of the study sample occupation are housewives. The Iraqi women mostly prefer to take care of her house and remain most her time in house to deal with their family.

In regard to socioeconomic status more than half of the study subjects reveal their economic status which are barely sufficient. This finding agrees with the study of Lauby-Secretan, *et al.*, (2015)<sup>(14)</sup> they represent the breast cancer which is the leading cause of death in the low and middle income.

Concerning to the residency of the present study sample, the majority of the current study sample are living in urban area. This finding matches with the study of Alwan, (2010)<sup>(15)</sup> who mentioned that the majority of their study sample are living in urban area.

#### Part-II: Discussion of the study sample physical problems related to chemotherapy

Regarding table (2), relative to respiratory system, the result of the study subject shows that the majority of them have low effect of chemotherapeutic drug on the respiratory system. Most of the patients who were included in this study who have no previous complication in the respiratory system before administration of chemotherapeutics agents experience negative side effect regard to the respiratory system, while several studies emphasized on the effect of chemotherapy on respiratory system like shortness of breath, infection and interstitial lung disease<sup>(16)(17)</sup>.

In regard to gastrointestinal system problems related to chemotherapeutic agents, the study finding represents the majority of the study sample who have moderate effect of chemotherapy on gastrointestinal system. The result shows that majority of the study sample experience nausea, change in the taste and poor appetite as a result of chemotherapy effect, and most of them experience moderate side effect such as (abdominal pain, burn in stomach, mouth ulcer, weight loss and vomiting), this problems may associated to the complication of toxicity of the drugs because it destroy the rapid division of cells like GIT lining cells. This finding agree with the result of Boussios, *et al.*, (2012)<sup>(18)</sup> which stated in their study that the majority of the study sample have gastrointestinal effect.

Concerning nervous system problems as a result from chemotherapy, the majority of the study sample shows moderate effect of chemotherapy on their nervous system in some items (peripheral neuropathy, muscle spasm, chills, headaches and lack of ability to concentrate), while there are high effect of chemotherapy on nervous system in the following two items (Suffer from a lack of physical activity) and (Suffer from numbness in the upper and lower extremities). This may result from action and side effect in the labels of certain medications like (Taxotere), these findings are in agreement with the study of Dietrich, (2010)<sup>(19)</sup> who stated that the chemotherapy drugs have certain effect on nervous system and can produce numbness and tingling in foot and hand.

About the musculoskeletal system problems related to chemotherapy, the study result shows high effect of the drugs in one item (Suffer from back pain, bone and joints), in addition there are moderate effect in two other items (Suffer from muscle weakness (fatigue) and bone marrow suppression) while there is low effect of chemotherapy on patients in one item (Suffer from Easily bone fractures). Therefore, the overall assessment of musculoskeletal system are moderate effect, one of these medication that has certain side effect on musculoskeletal system is Cisplatin. This result is supported by Chen, *et al.*, (2011)<sup>(20)</sup> they mentioned that certain chemotherapy drug have effects on the musculoskeletal system and produce generalized weakness, tiredness and bone suppression.

In regard the cardiovascular system problems as a result from chemotherapy treatment, the low score of all items except the one item (suffer from palpitation) that has moderate effect among patient who receive chemotherapy. Other studies mentioned that certain chemotherapeutic agents have cardiovascular problems<sup>(21)(22)</sup>.

Concerning blood problems among patients receiving chemotherapy, the overall assessment of hematological problems in the result show that there are moderate effects. The result presents that the patient who receives chemotherapy suffer highly

from fatigue even when patient did not perform any effort as a result of RBC destruction that make patient to feel exhaustion, while moderately suffer from congestion of the face and exposure to infection easily because of the decrease in the WBC related to side effect of certain chemotherapeutic drugs. This study result matches with many previous studies which emphasized that chemotherapeutic medications have hematological problems related to highly toxicity of chemotherapy<sup>(18)(23)</sup>.

Relative to endocrine system problems, the overall assessment of endocrine problems of the study result represent that there is a low effect of chemotherapy on endocrine system. Vergès, *et al.*, (2014)<sup>(24)</sup> mentioned that the endocrine side effect of chemotherapy could make defect on the glucose and lipid metabolism.

About the genitourinary system problems among patients receiving chemotherapy, the result of the study sample shows that the majority of the sample have low side effect of chemotherapy on the genitourinary system except on item (lack of sexual desire and impotence which have moderate effect, they may be related to the effect of cytotoxic medications. Partridge, *et al.*, (2001)<sup>(23)</sup> in their study result they mentioned that certain chemotherapeutic agent have genitourinary problems.

In relation to the skin problems related to chemotherapy, the result of the study shows the majority of the study sample have moderate skin effect related to chemotherapy. According to the study result, the patient highly suffers from hair loss and change in the strength of the hair, according to the drugs action, this problems result from most chemotherapy medications like (Methotrexate). Another study reveals that the majority of the study sample suffered from skin reaction. This is because of the properties of the chemotherapeutic agent in killing fast growing cells including skin cells<sup>(7)</sup>.

Concerning the vision problems related to chemotherapy, the finding of the study represents that the majority of the study sample have moderate effect of chemotherapy on their vision in all items (disturbances of vision) and (eye pain and eye socket), it results from the side effect of some chemotherapeutic drugs like Carboplatin. This study supported with the thesis of Singh and Singh, (2012)<sup>(25)</sup> who pointed that the certain chemotherapeutic agents have visual change like blurred vision. This effect may result from highly toxicity of chemotherapeutic agent that has damage on many sensitive part of the body.

### **Part-III: Discussion the relationship between socio-demographic data with overall assessment of physical problems:**

In regard to the socio-demographic characteristics in relation with physical problems of the study sample, the result of the study shows there is poor association between the study sample socio-demographic characteristic and their overall assessment of physical problems. This study disagrees with many studies that estimated that there is significant association between the certain socio-demographic data and the study sample physical problems due to chemotherapy<sup>(9)(26)</sup>.

#### IV. CONCLUSIONS

- 1- Most patients who receive chemotherapy refuse eating food because they have severe physical problems related to gastrointestinal tract like nausea, poor appetite and change in taste.
- 2- Fatigue related to anemia without performing heavy efforts is the main physical problem that affects the majority of cancer patients who receive chemotherapy.
- 3- There is an effect of physical problems among cancer patients which is related to treatment with chemotherapeutic agents on their ability to perform activities of daily living.
- 4- The socio-demographic characteristics have no influence on reduction or increasing of the physical problems resulting from toxicity of the chemotherapeutic agents of.

#### V. RECOMMENDATIONS

- 1- Conducting and developing oncology research that may contribute in reducing physical problems of cancer patient after receiving chemotherapy.
- 2- Teaching the patient with cancer about by qualified nurses about appropriate management to cope with physical problems related to treatment.
- 3- Involving the nursing staff in educational courses to improve their knowledge about chemotherapy side effect and appropriate interventions to reduce these effects.
- 4- Providing psychological support for patient and their family by encouraging them to participate in their management approaches.

#### REFERENCES

- [1] Siegel, R.; Naishadham, D. and Jemal A.: Cancer Statistics, *CA Cancer J Clin*, 2012, Vol(62), No(1), PP.:10-29.
- [2] Wagener, Th.: The History of Oncology, *Annals of Oncology .Oxford Journals*, 2011, Vol(22) ,No(8), PP.:1933-5.
- [3] Turkcan, A.; Zeng, B. and Lawley, M.: Chemotherapy Operations Planning and Scheduling, USA,Purdue University, *Weldon School of Biomedical Engineering*,2010,Vol(2), No(1), PP.: 31-49.
- [4] Tashima, T.: Possibilities of Cancer Chemotherapy Based on Transporter-Conscious Drug Design, *Journals of Carcinogenesis & Mutagenesis*, 2015, Vol(6), No(4).
- [5] National cancer institute, Chemotherapy and you, 2011. These books are available from NCI <http://www.cancer.gov>
- [6] American Cancer Society, 2014. Available on [www.cancer.org](http://www.cancer.org).
- [7] Fabbrocini, G.; Cameli, N.; Romano, M. Mariano, M.; Panariello, L.; Bianca, D. and Monfrecola, G.: Chemotherapy and skin reactions, *Journal of Experimental & Clinical Cancer Research*, 2012, Vol(31), No(50). <http://www.jeccr.com/content/31/1/50>
- [8] Gralla,R.; Houlihan, N.; and Messner, C.: Understanding and Managing Chemotherapy Side Effects, 2010, Cancer Care, *Elsevier Oncology*, New York.

- [9] Abbas, A.: Effect of Chemotherapy upon Lifestyle for Patients with Pulmonary Carcinoma, *Iraqi Journal of Cancer and Medical Genetics*, 2013, Vol(6), No (1), P.: 13-24.
- [10] Al-Wasiti,E.: An increased degree of oxidative DNA damage in Iraqi males with breast tumors, *International Journal of Advanced Research* , 2015, Vol(3), No(9), pp.: 602 – 608.
- [11] Al-Isawi, A.: Breast Cancer in Western Iraq: Clinicopathological Single Institution Study, *Advances in Breast Cancer Research*, 2016, Vol(5), PP.: 83-89. <http://dx.doi.org/10.4236/abcr.2016.52009>
- [12] Alwan, N.: Iraqi Initiative of a Regional Comparative Breast Cancer Research Project in the Middle East, *Journal of Cancer Biology & Research*, 2014, Vol(2), No(1), P.: 1016.
- [13] Ibrahim, N. and Ali, R.: Impact of instructional intervention program upon women's psychological health status who undergo chemotherapy after mastectomy, *Iraqi National Journal of Nursing Specialties*, 2012, Vol(25), Special issue .
- [14] Lauby-Secretan, B.; Scoccianti, Ch.; Loomis, D.; Lamia, L.; Véronique, V. Franca, F. and Straif, K.: Breast-Cancer Screening — Viewpoint of the IARC Working Group, *The new England journal of medicine*, 2015,Vol(372), No(24), PP.:2353-8.
- [15] Alwan, N.: Breast cancer: demographic characteristics and clinicopathological presentation of patients in Ira, *Eastern Mediterranean Health Journal*, 2010, Vol(16), No (11), P.: 1159.
- [16] Bou-Assaly, W. and Mukherji, S.: Cetuximab (Erbix),Pharmacology Vignette, *American Journal of Neuroradiology*, 2010, Vol(31), PP.:626 -7.
- [17] Burton, C.; Kaczmarski, R. and Jan-Mohamed, R.: Interstitial Pneumonitis Related to Rituximab Therapy, *The New England Journal of Medicine*, 2003, Vol(348), No(26) , PP.:2690-1.
- [18] Boussiosa, S.; Pentheroudakisa, G.; Katsanosb, K.; and Pavlidis, N.: Systemic treatment-induced gastrointestinal toxicity: incidence, clinical presentation and management, *Annals of Gastroenterology*, 2012; Vol(25), No(2), PP.: 106-18.
- [19] Dietrich, J.: Chemotherapy Associated Central Nervous System Damage, *Springer International Publishing*, 2010, Vol(678), PP.: 77-85.
- [20] Chen, D; Frezza, M.; Schmitt, S.; Kanwar, J.; and Dou, P.: Bortezomib as the First Proteasome Inhibitor Anticancer Drug: Current Status and Future Perspectives, *Curr Cancer Drug Targets*, 2011, Vol(11), No(3), PP.: 239-253. [PubMed].
- [21] Hasselt, J.; Boekhout, A.; Beijnen, J.; Schellens, J. and Huitemam, A.: Population Pharmacokinetic-Pharmacodynamic Analysis of Trastuzumab-Associated Cardiotoxicity, *Clinical Pharmacology & Therapeutics*, 2011, Vol(90), No (1), PP.:126-132.
- [22] Seidman, A.; Hudis, C.; Pierri, M.; Shak, S.; Paton, V.; Ashby, M. and et. al.: Cardiac dysfunction in the trastuzumab clinical trials experience,*Journal Clinical Oncology*, 2002, Vol(20), No(5), PP.:1215-21.
- [23] Partridge, A.; Burstein, H. and Winer, E.: Side Effects of Chemotherapy and Combined Chemohormonal Therapy in Women With Early-Stage Breast Cancer, *Journal of the National Cancer Institute Monographs*, 2001, Vol(93), No(11), PP.: 810-23.
- [24] Vergès, B.; Walter, T. and Cariou, B.: Endocrine side effects of anti-cancer drugs: effects of anti-cancer targeted therapies on lipid and glucose metabolism, *Eur J Endocrinol*, 2014, Vol(170), No(2), PP.:R43-55.
- [25] Singh, P. and Singh, A.: Ocular adverse effects of anti-cancer chemotherapy and targeted therapy, *Journal of Cancer Therapeutics & Research*, 2012, 2049-7962-1-5.
- [26] Al-Attar,W.: Quality of life assessment for patients with colorectal cancer, *Sci. J. Nursing/ Baghdad*, 2005, vol(18), No(2).

#### AUTHORS

**First Author** – ImanQasimKteo Al-hussein, M.Sc., M.Sc.Adults Nursing, Faculty of Nursing, University of Kufa  
**Second Author** – Dergham M. Hameed, Ph.D, AssistProfessor, Adult Nursing Branch, Faculty of Nursing, University of Kufa

