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## **Nursing Staff Knowledge regarding Safe Chemotherapy Administration at Oncology Center in Kirkuk City**

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### **ABSTRACT**

Chemotherapy drugs are wide range of therapeutic medication used in the managing of cancer diseases. Nursing staff prepare and administer chemotherapeutic drugs therefore they need more knowledge and competency in order to decrease adverse effect of the drugs to the cancer patients. Aim of the study: to assess nurses knowledge regarding safe chemotherapy administration at oncology center in Kirkuk city. A descriptive study was carried out from the period between 1<sup>st</sup> of February 2017 up to 1<sup>st</sup> of September 2017. A non-probability (purposive) sampling was used to select the sample. The study includes (40) nurses who works at the oncology center in Kirkuk city. For the purpose of the study a constructed questionnaire was designed. The data was collected through the utilization of self-administration technique. The data collection process was collected from the period of 1<sup>st</sup> of March 2017 up to the 1<sup>st</sup> April 2017. The data was analyzed through the application SPSS program version (20).

The results revealed that the most study sample were between age group 18-23 year (40%), (65 %) were female, (62.5%) were nursing school graduate, (65%)of them were between (1-6) Years of experience, and (60%) were without Training Session.

The study concluded that nurses' knowledge regarding to safe chemotherapy administration was inadequate, and also inadequate regarding general information to chemotherapy drugs. Chemotherapy safety administration standards should be applied for nurses that working in oncology center.

**Keywords:** knowledge, chemotherapy drug, safe chemotherapy administration, oncology.

## معارف الكادر التمريضي حول الاعطاء الآمن للعلاج الكيميائي في مركز الاورام السرطانية في مدينة كركوك

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### الملخص

أدوية العلاج الكيميائي هي مجموعة واسعة من الأدوية العلاجية المستخدمة في معالجة الامراض السرطانية. تشارك الملاكات التمريضية في إعداد و اعطاء الأدوية العلاجية الكيميائية وبالتالي يحتاجون إلى مزيد من المعرفة والكفاءة من أجل تقليل التأثير الجانبي للأدوية لمرضى السرطان. تهدف الدراسة الى تقييم معارف الملاكات التمريضية حول الاعطاء الامن للعلاج الكيميائي في مركز الأورام السرطانية في مدينة كركوك. اجريت دراسة وصفية للفترة من 1 شباط 2017 حتى 1 ايلول 2017. تم اختيار عينة غير احتمالية (غرضية). تضمنت الدراسة (40) ممرض و ممرضة يعملون في مركز الأورام السرطانية في مدينة كركوك. ولأغراض الدراسة تم تصميم استبيان لتحقيق اغراض الدراسة. تم جمع البيانات من خلال استخدام تقنية الملئ الذاتي من قبل الممرضون. وتم جمع البيانات من الفترة من 1 آذار 2017 حتى 1 نيسان 2017. و تم تحليل البيانات من خلال استخدام تطبيق برنامج الحقيبة الاجتماعية لعلم الاجتماع.

الدراسة بينت ان (40%) من الملاك التمريضي كانوا ضمن الفئة العمرية بين (18-23) سنة، و (65%) من الممرضين كانوا من الاناث، و (62.5%) منهم خريجين من اعدادية التمريض، و (65%) من الممرضين لديهم 1-5 سنوات من الخبرة في مهنة التمريض، و (60%) من الممرضين ليس لديهم دورات تدريبية في مجال العلاج الكيميائي.

استنتجت الدراسة ان معارف الكادر التمريضي حول الاعطاء الامن للعلاج الكيميائي كانت غير كافية المعلومات العامة للكادر التمريضي حول الدواء الكيميائي كانت غير كافية. يجب تطبيق المعايير العالمية للاعطاء الامن للعلاج الكيميائي من قبل الممرضين العاملين في مركز الاورام السرطانية.

**الكلمات الدالة :** المعارف , العلاج الكيميائي , الاعطاء الامن للعلاج الكيميائي , الاورام السرطانية.

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## 1. Introduction

Administration of anticancer drugs is a complex process tense with the possible for patient damage. Despite safety risks, there are many national standards for safe administration of chemotherapy drugs especially in the outpatient adult oncology setting. To meet this need, the American Society of Clinical Oncology and the Oncology Nursing Society created a collaborative project in 2008 to develop standards for safe chemotherapy administration to adult cancer patients [1]. Cancer disease is main leading cause of death worldwide, whereby more than 10 million people are diagnosed with cancer and 6 million deaths take place annually [2]. It has been estimated that there will be 15 million new cases each year by 2020 [3]. The disease affliction is much higher in Pakistan than developed countries [4]. Nursing staff caring of cancer patients receiving chemotherapy need particular knowledge and perception about the chemotherapy drugs and a competency to administer the drugs in order to ensure safety for patients. Chemotherapy drug is one of the most commonly prescribed cancer treatment methods which have complex treatment regimens with advanced technological devices. Nurses who used to administer chemotherapy need to update their practical and theoretical knowledge including drug calculations, proper dilutions, identification of antidotes of cytotoxic drugs, and management of side effects especially in case of extravasations or other side effect of the drug [5]. Therefore Chemotherapy safety process is essential in handling, administration and as well as patient care after treatment. The American

Society of Clinical Oncology (ASCO) and the Oncology Nursing Society (ONS) have established specific safety standards for the administration of chemotherapy. These standards require that each organization apply a comprehensive educational program and monitor nursing skills at specific intervals [6]. Most chemotherapy centers require personalize education and training programs but have not developed a common method to evaluate nursing competency in regard to safe-handling techniques. Given such, it is imperative that institutions providing chemotherapy initially engage staff and develop evaluation and safe-handling strategies that continue over time [7].

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### **Objective of the study:**

- 1- To assess nurses' general information regarding chemotherapy drugs.
- 2- To assess nurses' knowledge regarding safe chemotherapy administration.
- 3- To find out the relationship between demographic data of the nurses and nurses' knowledge.

## **2. Methodology**

Quantitative design using descriptive approach of the current study was carried out to assess the nurses' knowledge regarding safe chemotherapy administration from the period of 1st of February 2017 up to 1st of September 2017 at the oncology center in Kirkuk city, A non-probability (purposive sampling) sample was used including (40) nurses at the oncology center working in inpatients and outpatients and hematology department. The tools used in the study was constructed by the researchers to achieve the purpose of the study which include three parts; part one consist of demographic data of the nurses (5) items, part two consist of general information regarding chemotherapy drugs (15) items, part three consist of nurses knowledge regarding safe chemotherapy administration (16) items. These questions were scaled and rated of dichotomous rating scale; correct (2), and incorrect (1). The data was collected by self-reporting administration technique. A panel of (11) experts was included in the determination of the questionnaire items content validity. The data collection procedure was conducted from the period of 1<sup>st</sup> of March 2017 up to the 1<sup>st</sup> April 2017. The data were analyzed through utilization of the application of descriptive statistical and inferential analysis which includes (frequency and percentage, chi-square test) to the results of the study.

## **3. Results**

Results of **Table (1)** shows that the study sample were (40%) were between age group 18-23 year, (65 %) were female, (62.5%) were nursing school graduate, (65%) were between (1-6) Years of experience, (75%) were with Training Session.

**Table (1):** percent distribution of the nurses regarding to their demographical characteristic

No.	Age	F.	%
1	18-23	16	40
2	24-29	10	25
3	30-35	11	27.5
4	36 and more	3	7.5
total		40	100
No.	Gender	F.	%
1	Male	14	35
2	Female	26	65
total		40	100
No.	level of Education	F	%
1	Nursing school graduate.	25	62.5
2	Nursing Diploma graduate.	13	32.5
3	Nursing Bachelor graduate and more	2	5
total		40	100
No.	Years of Service	F	%
1	Less than 1	13	32.5
2	1-5	26	65
3	6-10	1	2.5
4	13-18	0	0
5	19 and More than	0	0
total		40	100
No.	Training Session	F	%
1	Not present	24	60
2	Present	16	40
total		40	100

**Table (2):** General Nurse's information regarding chemotherapy drugs

No	Items	Correct		Incorrect	
		F.	%	F.	%
1	There is a special drug or a special vaccine to prevent of cancer.	8	20	32	80
2	Physicians are the only person to dispense the chemotherapy.	4	10	36	90
3	The nurse can give chemotherapy by verbal order from the physician or pharmacist	14	35	26	65
4	Chemotherapy works to destroy cancer cells in some parts of the body.	21	52 .5	19	47 .5
5	Chemotherapy works to kill cancer cells by intervening to DNA synthesis	11	27 .5	29	72 .5
6	Cancer cells have resistance to chemotherapy.	19	47 .5	21	52 .5
7	Chemotherapy can give only in the hospital.	22	55	18	45
8	Chemotherapy works to destroy cancer cells and healthy cells in the body.	9	22 .5	31	77 .5
9	Chemotherapy can recognize between fast-growing cancer cells and fast-growing healthy cells	22	55	18	45
10	Side effects of chemotherapy, vomiting and nausea	23	57 .5	17	42 .5
11	Chemotherapy leads to delayed wound healing	0	0	40	100
12	Analgesics can used before chemotherapy drug	9	22 .5	31	77 .5
13	Chemotherapy does not effect on vital signs of the patient.	25	62 .5	15	37 .5
14	The dose of chemotherapy is measured in grams (gr).	8	20	32	80
15	Chemotherapy cannot be given with radiotherapy	26	65	14	35

F. = frequency

% = percentage

Table (2) shows that the most incorrect answer found in items (1, 2, 3, 5, 6, 8, 11, 12, and 14), and most correct answer found in items (4, 7, 9, 10, 13, and 15). The knowledge regarding chemotherapy was inadequate.

**Table (3): Nurse's knowledge regarding safe chemotherapy administration**

No	Items	Correct		Incorrect	
		F.	%	F.	%
1	Before giving chemotherapy, wash hands with:	23	57.5	17	42.5
2	Chemotherapy prepared before giving it to the patient in:	6	15	34	85
3	When preparing chemotherapy	3	7.5	37	92.5
4	The nurse monitors the patient's condition when receiving chemotherapy	5	12.5	35	87.5
5	Before giving chemotherapy, you should wash your hands	4	10	36	90
6	The role of the nurse when giving chemotherapy seen in:	9	22.5	31	77.5
7	Before giving chemotherapy, be sure to check	12	30	28	70
8	Chemotherapy problems, leakage of chemotherapy is	24	60	16	40
9	Angle of needle or cannula when given chemotherapy	20	50	20	50
10	preferred number of nurses who treating the patients is	30	75	10	25
11	Which of the following statements is correct about giving chemotherapy after surgery	24	60	16	40
12	When preparing of chemotherapy and give it to the patient its preferred: -	34	85	6	15
13	To avoid the pain resulting from the needle stick:	27	67.5	13	32.5
14	The type of IV fluid used to clean the vein before and after the chemotherapy:	4	10	36	90
15	15. Signs of severe hypersensitivity to chemotherapy:	11	27.5	29	72.5
16	The dose of chemotherapy depends on:	14	35	26	65

F. = frequency

% = percentage

Results of Table (3) revealed that the most incorrect answer found in items (2, 3, 4, 5, 6, 7, 14, 15, and 16) and most correct answer found in items (1, 8, 10, 11, 12, and 13), the knowledge regarding safe chemotherapy administration was inadequate.

**Table (4): Association between nurses' general information about chemotherapy and demographic data**

No.	Variable		correct		incorrect		obs. $\chi^2$	Crit. $\chi^2$	df	Sig.
			F.	%	F.	%				
1	age	18-23 y.	114	44.5	142	55.5	8.79	9.84	3	NS
		24-29 y.	67	41.9	93	58.1				
		30-36 y.	54	30.7	122	69.3				
		36 and more	19	39.6	29	60.4				
2	gender	Male	61	27.2	163	72.8	15.5	3.84	1	S
		female	179	43.0	237	57.0				
3	Educational level	Educational level	153	38.3	61.7	247	4.17	5.99	2	NS
		Educational level	64	30.8	69.2	144				
		Educational level	14	43.8	56.2	18				
4	Years of services	< 1 y.	80	38.5	128	61.5	3.84	5.99	2	NS
		1-5 y.	159	38.2	257	61.8				
		6-10 y.	10	62.5	6	37.5				
5	No. of training session	Not present	151	39.3	60.7	13.31	3.84	1	S	
		present	96	37.5	62.5					

DF= degree of freedom

S= significant

NS= not significant

A result of Table (4) shows that the association between nurses' knowledge regarding safe chemotherapy administration and nurses (age, educational level, and years of services) were statistically not significant, whereas the association between nurses' knowledge regarding



safe chemotherapy administration and nurses (gender, number of training session) were statistically significant at  $p\text{-value} \leq 0.05$ .

#### **4. Discussion**

The study conducted to assess the nurses' knowledge regarding safe chemotherapy administration among nursing staff that working at oncology center. The study also connects the knowledge of the nurses in relation to chemotherapy drugs with the knowledge of its administration. According to the results of the study it indicated that the nurses have inadequate knowledge regarding the drugs of chemotherapy and the administration of chemotherapy, this finding is important for nursing care to cancer patients because if oncology nurses did not have advance knowledge and they have less competent in their practice will be considered as unsafe for providing chemotherapy drug administration safely to cancer patients and chances for medication administration errors can be high as various studies in past already emphasized these issues [8,9] Nurses' information regarding chemotherapy and knowledge about administration of chemotherapy about the handling of cytotoxic drugs remains a concern linked to advance in safety standards. Efficient nurses' knowledge about uses the safety measures in their practices has positive affect on cancer patients' response to treatment process. Literatures and previous studies reports that there is a gap between the nurses' knowledge and their actual competency with respect to the use of protective measures [10,11]. The findings show that the level of knowledge of the nurses on this concern is not adequately satisfied. In previous studies, it is reported that the staff of nursing handling the chemotherapy drugs don't have a satisfactory level of knowledge regarding the risk factors [12]. This lack of knowledge on preventive measures is of concern because it increases the health workers' unsafe behavior. Encouraging to Joining in a training program created significant difference on the level of knowledge; the training of all staff involved with any aspect of the handling of hazardous drugs is one of the three essential elements described in the Occupational Safety and Health Administration guidelines [13].

The results also similar with the results of the study conducted by Chaudhary R., and Kumar B., 2012 in which their results indicate poor knowledge in relation to personal protective equipment uses during chemotherapy drug administration [14] As is evident of the result, the most common of the nursing staff was not oncology trained and had poor knowledge about the use

of chemotherapy and importance of cytotoxic drugs and the management of their physical and psychological side effects experienced by cancer patients. Therefore, may have developed some negative attitude towards chemotherapy administration. In consistent with the recent study findings other studies found that the nurses were inadequately prepared to care for cancer patients and consequently, held negative views about the disease and its treatment [15]. The results of the present study also, supported by the finding which was concluded that the total overall result of the study indicated that the participants have poor knowledge and skills [16].

Despite of the little research of the study in Kirkuk city, the results of current study may be supposed to be an essential in addition to the existing of knowledge, especially in Kirkuk city context as no previous research within oncology nursing staff, has been conducted in this subject.

## **5. Conclusions**

- 1- The knowledge of nurses regarding safe chemotherapy administration was inadequate. And Nurses' general information regarding chemotherapy drug was inadequate.
- 2- The association between general nurses information regarding chemotherapy drug and nurses (gender, years of experience, number of session) were statistically significant. Except in (age, educational level) were statistically not significant.
- 3- The association between nurses' knowledge regarding safe chemotherapy administration and nurses (gender, number of session) were statistically significant. Except in (age, educational level, years of experience) were statistically not significant.

## **6. Recommendations**

1. Chemotherapy safety administration standards must be applied for nurses that working in oncology center.
2. Emphasize on participating nurses in training session program specialized in chemotherapy administration inside and outside the country to increases the knowledge and competency of the nurse.
3. Nursing faculty should pay more attention for cancer disease and chemotherapy administration subject in the curriculum.
4. Establish postgraduate studies specialized in oncology nursing.

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