

## Effectiveness of Teaching Program on Nurses' Knowledge Concerning the Side Effects of Chemotherapy among Children with Leukemia at Oncology Wards in Baghdad City

فاعلية البرنامج التعليمي على معارف الممرضين بشأن الآثار الجانبية للعلاج الكيماوي بين الأطفال المصابين بابيضاض الدم في ردهات أورام الدم في مدينة بغداد

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### الخلاصة

**الهدف:** لتقييم فاعلية البرنامج التعليمي على معارف الممرضين بشأن الآثار الجانبية للعلاج الكيماوي بين الأطفال المصابين بابيضاض الدم .

**المنهجية:** دراسة وصفية شملت ( ٣٥ ) من الممرضين العاملين في ردهات أورام الدم في ثلاث من مستشفيات بغداد التعليمية (حماية الأطفال, الطفل المركزي , بغداد) للفترة من ٢ تشرين الأول إلى ٢٧ حزيران من ٢٠١٥ . وكانت العينة غير احتمالية (غرضية) من الممرضين (الذكور والإناث) . وحيث استعملت استبانته مصممة من جزئين رئيسيين اهتم الجزء الأول بالمعلومات الاجتماعية و الديموغرافية للممرضين . أما الجزء الثاني والذي تكون من أربعة محاور اهتم بمعارف الممرضين بشأن الآثار الجانبية للعلاج الكيماوي بين الأطفال المصابين بابيضاض الدم . قام الباحث بتقييم معارف الممرضين لكل مستشفى على حده من خلال الاختبار القبلي ثم قدم البرنامج التعليمي المتكون من أربع محاضرات . كل يوم ، تم إعطاء محاضرة مدتها ساعة واحدة بعد ذلك ، اجري الاختبار البعدي . كما تم تحليل البيانات باستخدام الأساليب الإحصائية الوصفية و الاستدلالية .

**النتائج:** أظهرت نتائج الدراسة أن المعرفة العامة بشأن الآثار الجانبية للعلاج الكيماوي كانت 45.7 % (جيدة) لمرحلة الاختبار البعدي بينما كانت 51.4 % (مقبول) في الاختبار القبلي .

**التوصيات:** أوصت الدراسة على إشراك الممرضين في البرامج و الدورات التدريبية و الندوات والاجتماعات وورش العمل وتبادل الخبرة مع الدول الأخرى وكل ما لهو شأن بعلاج ابيضاض الدم و الآثار الجانبية للعلاج الكيماوي .

**الكلمات المفتاحية:** فاعلية، البرنامج التعليمي، معارف الممرضين ، الآثار الجانبية للعلاج الكيماوي ، الأطفال تحت تأثير العلاج الكيماوي.

### Abstract:

**Objective(s):** to assess the effectiveness of educational program on nurses' knowledge concerning the side effects of chemotherapy among children with leukemia.

**Methodology:** A descriptive analytic (quasi – experimental) design study was carried out at Baghdad City from 2<sup>nd</sup> of October to 27<sup>th</sup> of June 2015. Non-probability sample of (35) male and female nurses was selected from the Oncology Wards in Children Welfare, Child's Central and Baghdad Teaching Hospital. The study instruments consisted of two major parts to meet the purposes of study. The first part is related to nurses' demographic characteristics and the second part (four domains) is related to nurses' knowledge concerning the side effects of chemotherapy. The researcher examined the nurses knowledge for each hospital alone by introducing the pre-test then, the teaching program of four lectures was given. Every day, a one – hour lecture was given. Afterward, the post-test. The data were analyzed by using two statistical approaches: Descriptive and Inferential statistics.

**Results:** The study revealed that the general knowledge of nurses regarding side effects of chemotherapy was 45.7% (Good) for the post-test as opposed to the pre-test which was 51.4% ( acceptable).

**Recommendation:** The study recommended that nurses should be encouraged to attend specific meetings, programs, workshops and seminars in concern of leukemia treatment and side effect of chemotherapy to be acquainted with the most recent, advances and skills in the field.

**Keywords:** Effectiveness, Teaching Program, Nurses' Knowledge; Side Effects of Chemotherapy; Children Undergoing Chemotherapy.

## Introduction

Childhood cancers are an important cause of morbidity and mortality in children younger than 15 years. Pediatric cancers differ from those in adults since they are more aggressive and consequently more responsive to chemotherapy. Common malignancies in children include leukemia (30%), brain tumors (20%) and lymphoma (12%), and followed by neuroblastoma, retinoblastoma and tumors affecting the soft tissues, kidneys, bones and gonads<sup>(1)</sup>. Leukemia is a malignant hematopoietic disease characterized by an uncontrolled proliferation and block in the differentiation of hematopoietic cells. These malignant cells can spread to the lymph nodes, spleen, liver and other tissues. Leukemia is classified widely as acute or chronic, referring to the type of cell affected and by the rate of cell growth and of myeloid or lymphoid according to the type of cell that is multiplying abnormally<sup>(2)</sup>. Chemotherapy is a type of treatment that uses drugs to attack cancer cells. It is called a "systemic treatment" since the drug enters through the blood stream, travels throughout the body and kills cancer cells at their sites<sup>(3)</sup>. Chemotherapy also affects the normal and actively dividing cells such as those in the bone marrow, the gastrointestinal tract, the reproductive system and in the hair follicles. Most patients experience some degree of side effects which may include nausea and vomiting, fatigue, hair loss, susceptibility to infections, decrease in blood cell count and mouth sores and ulcers<sup>(4)</sup>. The main role of the nurse is to provide the children with adequate information about the planned procedures at the developmentally appropriate level. The physical care of children with leukemia is often complex and a challenge to the nurses' creativity. These children have many hospitalizations during the

course of their illness and benefit from the consistent individualized care. General areas of nursing care include the assessment, management and prevention of infections, pain, side-effects of chemotherapy and nutritional problems<sup>(5)</sup>. An oncology nurses can play a critical role in reducing the burden of chemotherapy associated with adverse effects of treatment<sup>(6)</sup>.

## Methodology

A descriptive analytic (quasi – experimental) design study was carried out at Baghdad City for the period 2<sup>nd</sup> of October to 27<sup>th</sup> of June 2015. Non-probability sample of (35) male and female nurses was selected from the Oncology Wards in the Children Welfare, Child's Central and Baghdad Teaching Hospital. The study instrument (questionnaire) was consisted of two major parts to meet the purposes of study. The first part is related to nurses' demographic characteristics such as age, gender, educational level, years of experience in hospitals, years of experience at oncology wards, training sessions in caring of children with leukemia undergoing chemotherapy (number and places) and lastly, the source of information they have in relation to the side effects of chemotherapy for leukemic children, and the second part is related to nurses' knowledge concerning the side effects of chemotherapy among children with leukemia. It consisted of four domains and each domain had 10 multiple choice questions (MSQ). A Program was design of four lecture, every day, a one hour lecture was given. The nurses are exposed to an teaching program inside oncology wards. This is due to shortage of nurses staff and high number of leukemic patients in the unit, which make selecting another area very difficult. The validity of the program and questionnaire was established through a panel of (20) experts of different specialties related to the field of the present study. They were asked respectively to review the questionnaire for

clarity and adequacy in order to achieve the present study objective. The reliability for constructed questionnaire was determined by using pilot study. A pilot study was carried out between the 1<sup>st</sup> of February to the 4<sup>th</sup> of February 2015. Five nurses were selected randomly from AL-Kadhmiya Teaching Hospital. The pilot study sample was excluded from the original sample of the study. The researcher examined the nurses' knowledge by introducing the pre-test then, the teaching program, and afterward, the post-test was applied. The reliability of instruments was evaluated statistically. Pearson's coefficient of correlation was used to estimate the scale of both pre- test and post- test ( $r = 0.95$ ). Data were analyzed through the application of descriptive statistical analysis (Frequency, Percentage, Mean and Standard deviation) and inferential statistic ( $r$ -test, Chi-square test) and  $p$ - value by using SPSS version 20.

#### Results:

**Table(1):Demographic Characteristics of the Study Respondents**

| Items                    |  | Freq.     | %           |
|--------------------------|--|-----------|-------------|
| <b>Gender</b>            | <b>Male</b>                                | <b>15</b> | <b>42.9</b> |
|                          | <b>Female</b>                              | <b>20</b> | <b>57.1</b> |
| <b>Age group</b>         | <b>20-30 Years</b>                         | <b>15</b> | <b>42.9</b> |
|                          | <b>31-40 Years</b>                         | <b>16</b> | <b>45.7</b> |
|                          | <b>41-50 Years</b>                         | <b>4</b>  | <b>11.4</b> |
| <b>Educational level</b> | <b>Graduate Junior High Nursing School</b> | <b>11</b> | <b>31.4</b> |
|                          | <b>Graduate Nursing Institute</b>          | <b>14</b> | <b>40.0</b> |
|                          | <b>Bachelor of Nursing</b>                 | <b>10</b> | <b>28.6</b> |
|                          | <b>Postgraduate</b>                        | <b>0</b>  | <b>.0</b>   |

Table 1. (Continued)

| Items  |                    | Freq. | %     |
|--|--------------------|-------|-------|
| Years of experience in hospitals   | 1-5 Years          | 19    | 54.3  |
|  | 6-10 Years         | 2     | 5.7   |
|  | 11-15 Years        | 8     | 22.9  |
|  | 16-20Years         | 4     | 11.4  |
|  | More than 21 Years | 2     | 5.7   |
| Years of experience at Oncology wards  | 1-5 Years          | 27    | 77.14 |
|  | 6-10 Years         | 4     | 11.43 |
|  | 11-15 Years        | 4     | 11.43 |
| Are you attended training sessions in caring of children with Leukemia undergoing chemotherapy | Yes                | 13    | 37.1  |
|  | No                 | 22    | 62.9  |
| Place of training sessions   | In Iraq            | 13    | 100   |
|  | Outside Iraq       | 0     | 0     |

Freq =Frequency; % =percentage

Table (1) shows the demographic characteristics of the study sample which was 57.1% females, 45.7% at age (31-40) years , 40.0% graduated from the nursing institute, 54.3% of them have 1-5 years of experience, 77.14% of them have 1-5 years of experience at Oncology wards , 62.9% have no training sessions in caring for children with leukemia undergoing chemotherapy, and had training sessions 100% in Iraq.

**Table(2):Nurses' Responses (Pre -test and Post- test) Concerning Their Knowledge about The Side Effects of Chemotherapy among Children with Leukemia**

| Nurses' Responses | Pre- test |      | Post- test |      |
|-------------------|-----------|------|------------|------|
|                   | Freq.     | %    | Freq.      | %    |
| Failure           | 1         | 2.9  | 0          | .0   |
| Not acceptable    | 13        | 37.1 | 3          | 8.6  |
| Acceptable        | 18        | 51.4 | 11         | 31.4 |
| Good              | 3         | 8.6  | 16         | 45.7 |
| Excellent         | 0         | .0   | 5          | 14.3 |

Freq =Frequency; % =percentage

Failure = (0-9) , Not acceptable = (10-19), Acceptable = (20-27), Good = (28-34)

and Excellent = (35- 40)

Table (2) presents the differentiation between the results of the pre -test and post- test about nurses' knowledge regarding the side effects of chemotherapy among children with leukemia. Responses for the post- test were good amounting to 45.7% of the total responses whereas for the pre-test they were only 51.4% (acceptable).

**Table(3): Statistical Differences between Pre and Post -tests Concerning the Nurses' Knowledge with Regard to the Side Effects of Chemotherapy among Children with Leukemia**

| Nurses' knowledge | Mean | Std. Deviation | t-test | p-value |
|-------------------|------|----------------|--------|---------|
| pre –test         | 1.66 | 0.684          | -7.355 | 0.000   |
| post –test        | 2.66 | 0.838          |        |         |

Std. Deviation = Standard Deviation; p-value = Probability Value

Table (3) reveals the effectiveness of the program through the p-value of the nurse's response concerning their knowledge about the side effects of chemotherapy among children with leukemia between pre and post-test.

**Table(4):Statistical Differences between Demographic Characteristics and Nurses' Knowledge Regarding the Side Effects of Chemotherapy among Children with Leukemia**

| Items   | Pre- test  |         |          | Post- test |         |          |
|---|------------|---------|----------|------------|---------|----------|
|   | Chi-Square | p-value | sig.     | Chi-Square | p-value | sig.     |
| Gender  | 1.618      | 0.655   | Ns       | 2.205      | 0.531   | Ns       |
| Age group   | 3.059      | 0.801   | Ns       | 4.575      | 0.599   | Ns       |
| Educational level   | 11.500     | 0.047   | <b>S</b> | 9.272      | 0.015   | <b>S</b> |
| Years of experience in hospitals  | 12.109     | 0.437   | Ns       | 23.091     | 0.027   | <b>S</b> |
| Years of experience at oncology wards   | 1.396      | 0.966   | Ns       | 1.842      | 0.034   | <b>S</b> |
| Attending training sessions in caring of children with leukemia undergoing chemotherapy | 0.643      | 0.887   | Ns       | 3.131      | 0.372   | Ns       |

P-value = Probability Value ; sig. = Level of Significance; Ns=Not Significant; S= Significant

*P value significant at level  $\leq 0.05$*

Table (4) indicates that there is no significant association between demographic characteristics of nurses and their knowledge regarding the side effects of chemotherapy among children with leukemia domains, except that their educational level was significant in both pre-test and post-test . Also the years of experience in hospitals and years of experience at Oncology wards in post -test there were significant association.

## Discussion:

### Part I: The Nurse's Demographic Characteristics Distribution

#### 1. Gender of Nurses:

The present results revealed that 57.1% of the sample were female. The findings of the present study supportive evidence is available in the study that showed ( the high percentage of their sample were female, 65%)<sup>7</sup> .

#### 2. Age of Nurses:

According to the results, 45.7% of nurses were at the age (31-40). These results supportive evidence is available in the study that showed ( 55% of nurses in his study group were (31-40) years old)<sup>8</sup> . But disagree with the results that showed (the highest percentage of nurses 42% at the age (20-24) years)<sup>7</sup> .

### 3. Nurse's Level of Education:

The majority of the sample were nursing institute graduates with the percentage of 40.0%. The findings of the present study supportive evidence is available in the study that showed ( highest percentage of nurses 65% are nursing institute graduates)<sup>7</sup>. But the study results disagree with the study that showed( 42.5% of her study samples were graduates from a secondary school of nursing)<sup>9</sup>.

### 4. Years of Experience in Hospitals:

Finding of the present study revealed that the highest percentage 54.3% have (1-5) years of experience in hospitals. The result of this study disagree with result that showed (highest percentage 80% have (6-10) years of experiences in nursing)<sup>10</sup>.

### 5. Years of Experience at Oncology Wards:

The present study showed that the highest percentage 77.14% of the sample have (1-5) years of experience at oncology wards. The findings of the present study supportive evidence is available in the study that showed (the highest percentage 85% have (1-5) years of experiences in the leukemic wards)<sup>10</sup>. Also, agree with study that showed ( highest percentage 70% had (1-5) years of experience in the leukemic wards)<sup>7</sup>.

### 6. Training Sessions in Caring of Children with Leukemia Undergoing Chemotherapy:

Nurses who had no training sessions in caring of children with leukemia comprised 62.9% of the sample. Others had training sessions inside Iraq. These results agreed with the results of study that showed ( the highest percentage 87.5% had no training

sessions in pain management)<sup>7</sup>. But disagreed with the study results that showed (73.5% of the study sample had previous training sessions)<sup>11</sup>.

### Part II: Nurses' Responses (Pre-Tests and Post-Tests) Concerning Their Knowledge Regarding the Side Effects of Chemotherapy among Children with Leukemia Table (2):

The data analysis of the questionnaire for the theoretical part was divided into two items which present the differences between the pre-test and post-test results in relation to the general knowledge of nurses regarding the side effects of chemotherapy. The good response for the post-test was 45.7% while the acceptable responses for the pre-test was 51.4 % table (2). The findings of the present study supportive evidence is available in the study that showed( poor nurses' knowledge about pain management led to the lack of pain management practice provided for the child with a pain attack )<sup>12</sup>.

### Part III: The Effectiveness of the Teaching Program On Nurses' Knowledge with Regard to the Side Effects of Chemotherapy among Children with Leukemia Between the Pre-Test and the Post-Test Table (3):

After the implementation of the program, the results of the data analysis are shown in table (3), the effectiveness of the program through the p-value of the nurses' responses concerning their knowledge about the side effects of chemotherapy among children with leukemia between the pre-test and the post-test. The findings of the present study supportive evidence is available in the study that showed( the in service training program had a beneficial effect on improving the nurses' knowledge

and skills. The study also found a high significant differences of  $p\text{-value} > (0.05)$  concerning the effectiveness of nurses' knowledge when analyzing pre and post-test study results on the control group)<sup>13</sup>.

**Part IV: The Relationship between Nurses' Demographic Characteristic and Nurses' Knowledge Regarding the Side Effects of Chemotherapy among Children with Leukemia Table (4)**

The results showed no significant association between gender and nurses' knowledge regarding the side effects of chemotherapy among children with leukemia at  $P\text{-value} > 0.05$ . The findings of the present study supportive evidence is available in the study that showed (no relationship between gender and nurses practice)<sup>14</sup>.

The study also showed no significant association between age group and nurses' knowledge regarding the side effects of chemotherapy among children with leukemia at  $P\text{-value} > 0.05$ . the present study supportive evidence is available in the study that showed (no significant association between nurses' age and their knowledge)<sup>15</sup>.

The study also showed significant association between level of education and nurses' knowledge in pre –test and post-test. These results disagreed with study that showed (no significant differences between nurses' knowledge and their level of education)<sup>8</sup>. But, they agreed with another study that showed (the positive relationship between nurses' knowledge and their level of education)<sup>16</sup>.

The study also showed significant association between years of experience in hospitals and nurses' knowledge in the post-test, but no significant association in the pre- test. The findings of the present study

supportive evidence is available in the study that showed (there was a significant relationship between the nurses' knowledge and nursing experience, but disagree with the result of the pre –test)<sup>17</sup>.

The results of table (4) also indicated no significant association in the pre- test between years of experience at oncology wards and nurses' knowledge regarding the side effects of chemotherapy among children with leukemia. But in the post -test there was a significant association between years of experience at Oncology wards and knowledge of nurses. This result of pre- test disagrees with study that showed (the years of experience in specialist areas where the nurse's work would increase their knowledge, but agree with the result of the post- test)<sup>18</sup>.

Regarding the relationship between training sessions and the nurses' knowledge scores, the present study indicated that there was no significant association between attending training sessions in caring of children with Leukemia undergoing chemotherapy and knowledge of nurses regarding the side effects of chemotherapy among children with leukemia at  $P\text{-value} > 0.05$ , as shown in table (4 ). This result of the study disagrees with the study that showed (there was a significant association between nurses' knowledge and training sessions)<sup>7</sup>.

**Recommendations:**

1. Nurses should be encouraged to attend specific meetings, programs, workshops and seminars concerning the leukemia treatment and the side effect of chemotherapy to be acquainted with the most recent advances and skills in the field.
2. Conducting periodic monitoring of nurses' knowledge and practice to evaluate the level of nurse's knowledge working in the chemotherapy field.



3. Mass media approved its effect on education. Special programs should be designed and directed to nurses working in oncology wards.

4. Applying global educational standards to promote nurses' knowledge and practices. This can be done by sharing training courses outside the country and receiving updates concerning this matter.

5. Further studies can be carried out in different settings and places with consideration to wide – range sample characteristics to be more representative and to get more results.

## References

1. Ghai OP, Paul VK, Bagga A. Essential pediatrics. 7<sup>th</sup> ed. New Delhi: CBS Publishers and distributors; 2009.
2. Lee, S.J., K.H. Kim, J.S. Park, D.W. Kim and K.P. Kim Comparative analysis of cell surface proteins in chronic and acute leukemia cell lines. Biochem. Biophys. Res. Comm. 2007, 357, P.P: 620-626.
3. Jaypee Brothers, Medical Surgical Nursing, B.T. Bhasavanthappa, medical Publishers, New Dehli 1<sup>st</sup>ed , 2003 . Pg no 111,160 & 123.
4. Joyce. Black, Jane, Hokanson hawks, Medical Surgical Nursing 7<sup>th</sup>ed, 2005 ,pg no 351 395 365 & 375,
5. Marlow DR, Redding BA. Textbook of pediatric nursing. 6<sup>th</sup> ed. Philadelphia: W.B Saunders Company; 2007.
6. Hawkins, R. and S. Grunberg, Chemotherapy induced nausea and vomiting: challenges and opportunities for improved patient outcomes .Clinical Journal of Oncology Nursing, 2009 , Vol (13) , P.P : 14-21
7. Al-Ibady, Z. W. : Assessment of Nurses Knowledge and Practices toward Pain Management for Leukemic Child in Baghdad Pediatric Teaching Hospitals, University of Baghdad, College of Nursing, Unpublished thesis, October, 2011, P.P : 63- 67 .
8. Al - Gannem, A. : Effectiveness of Nursing Educational Program upon Nurses Knowledge and Practices Concerning Chemotherapy Precautions , University of Baghdad, College of Nursing, Unpublished doctorate dissertation , March ,2006 , p.p. 91- 92.
9. Hassan, S and Hassan, H; "Effectiveness of Nursing Education Program on Nurses Knowledge toward Arrhythmia in Kirkuk's Teaching Hospitals". College of Nursing, University of Kirkuk. 2012. Kufa Journal for Nursing Sciences ISSN: 22234055 Year: 2012 Volume: 2 Issue: 3 P.P: 56-64
10. Barton, J. : Pain Knowledge and Attitudes of Nurses and Midwives in a new Zealand Context , unpublished Masters of Arts ( applied ) , Victoria University of Wellington , Wellington ,2001 .
11. Asadullal, M.; Karthik, G.; Dharmappa, B.: Study on knowledge, attitude and practice regarding biomedical waste management among nursing staff in private hospitals in Udupi City, Karnataka, India, International journal of Geology, Earth and environment science, Vol.3(1), 2013, PP:118-123.
12. McCaffery , M., & Robinson , E . your patient are in pain ; here how you respond . Nursing 2002, 32 (10)
13. Abd - Allah, M.: Assuring quality care through a managerial inservice training program for head nurses working in Assiut University Hospital, DNS thesis of nursing service administration, Assiutunveristy, 2000.

**14.** Mank , A. and van der Lelie ,H.: Is there still an indication for nursing patients with prolonged neutropenia in protective isolation ? An evidence – based nursing and medical study of 4 years experience for nursing patient with neutropenia without isolation . European journal of oncology nursing , 7,2003, p.p. 17- 23 .

**15.** McCaffery ,M., Ferrell ,B.R., , Nurses Knowledge of Pain Assessment and Management : how much progress have we made ? Journal of pain and symptom management , 1997 , 14(3) , p.p. 175-188.

**16.** Al –Mansory , Assessment of Nurses Knowledge Concerning Peritonitis \_ Dialysis associated in Baghdad Teaching Hospitals ,unpublished thesis in Medical – Surgical nursing , College of Nursing ,University of Baghdad ,2005.

**17.** Sessa, A.; Di Giuseppe, G. Albano, L.: Investigation of nurses knowledge, attitude and practice regarding disinfection procedure in Italy, BMC Infection Disease, 2011, Vol.11 (1) , PP: 1-6.

**18.** Al-Jaza'iri M. A.: Assessment of nurses knowledge concerning children with cleft lips and cleft palate at pediatric teaching and non-teaching hospitals in Baghdad, master thesis pediatric nursing, college of nursing, Baghdad university, 2007.