

Nurses' Knowledge about Infection Prevention for Patients with Leukemia

معارف الممرضين حول الوقاية من العدوى لمرضى سرطان الدم

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الخلاصة:

خلفية البحث: في العادة، يحتاج مريض سرطان الدم إلى تدخل علاجي فوري، لكن معظم المرضى يطلبون العناية الطبية للأعراض المتعلقة بفقر الدم أو العدوى أو النزيف. لأسباب غير محددة، تزداد الحمى والعدوى أيضاً من احتمال حدوث نزيف، وبالتالي، فإن مريض سرطان الدم يتعرض دائماً للتهديد بالعدوى.

الأهداف: تهدف الدراسة إلى تقييم معرفة الممرضين حول الوقاية من العدوى للمرضى الذين يعانون من سرطان الدم واكتشاف العلاقة بين معارفهم والخصائص الديموغرافية (سنوات الخبرة والدورات التدريبية).

المنهجية: دراسة وصفية أجريت في مستشفى بغداد التعليمي و بدأت من 7 أيلول \ 2019 إلى 17 كانون الأول \ 2019. استخدمت هذه الدراسة عينة غير محتملة (هادفة) من (30) ممرض وممرضة ممن يعتنون بمرضى سرطان الدم في الردهات الطبية في مستشفى بغداد التعليمي. تم جمع البيانات من خلال استبيان مصمم، والذي يتكون من استمارتين؛ الخصائص الديموغرافية للممرضين ومعرفة الممرضين حول الوقاية من العدوى. تم تحديد صحة الاستبيان من خلال لجنة خبراء وتم تحديد موثوقيتها من خلال دراسة تجريبية عن طريق اختبار إعادة الاختبار والتي قدرت بمتوسط ($R = 0.87$). تم جمع البيانات عن طريق المقابلة المباشرة، وتم تحليل البيانات من خلال تطبيق الأساليب الإحصائية الوصفية والاستنتاجية (التكرار، النسبة المئوية، متوسط الدرجات، ارتباط بيرسون ومربع كاي).

النتائج: أشارت نتائج الدراسة إلى أن عينة الدراسة كانت ذكور (70%)، (53.4%) ضمن الفئة العمرية (20-29 سنة)، (60%) كانت تعيش في المناطق الحضرية، (40%) كانوا غير متزوجين، (46.7%) كان لديهم (4-6) سنوات من الخبرة في ردهات الأورام.

الاستنتاج: أظهرت النتائج أن غالبية عينة الدراسة تعكس أهمية معتدلة للمعرفة في التدابير التي يتخذها الممرض تجاه الوقاية من العدوى، بينما أظهرت أهمية منخفضة في تعليم المريض حول الوقاية من العدوى. بالإضافة إلى ذلك، هناك علاقة كبيرة بين معرفة الممرضين وسنوات خبرتهم ممن لديهم دورات تدريبية داخل العراق وخارجه.

التوصيات: أوصت الدراسة ببدء مجموعة من الدورات التدريبية المتخصصة في مجال الوقاية من العدوى تحت إشراف الخبراء الأكاديميين والممارسين، ويجب تطبيق إرشادات إضافية لمكافحة العدوى في الردهات الطبية في المستشفيات التعليمية في بغداد.

الكلمات المفتاحية: الممرض، المعرفة، منع العدوى، سرطان الدم.

ABSTRACT:

Background: Typically, patients with leukemia require immediate therapeutic intervention but most patients seek medical attention for symptoms related to anemia, infection, or bleeding. For undetermined reasons, fever and infection also increase the likelihood of bleeding, thus, the patients with leukemia are always threatened by infection.

Aims of the study: The study aims to assess the nurses' knowledge about infection prevention for patients with leukemia and to find out the relationship between their knowledge and demographic characteristics (years of experience and training courses).

Methodology: A descriptive study carried out at Baghdad teaching hospital and starting from September 7th, 2019 up to December 17th, 2019. This study used a non-probability (purposive) sample of (30) nurses that caring of patients with leukemia at medical wards at Baghdad teaching hospital. The data collected with designed questionnaire, which consists of two forms; nurses' demographic characteristics and nurses' knowledge about prevention of infection. The validity of the questionnaire was determined through an expert panel and its reliability was determined through a pilot study by test – retest which was estimated as averages ($R=0.87$). Data was collected by direct interview and data was analyzed by application of descriptive & inferential statistical methods (frequency, percentage, mean of score, Pearson correlation and Chi-Square).

Results: The results of the study indicated that the study sample was male (70%), (53.4%) within age group (20-29 years), (60%) was living in urban areas, and (40%) was single. (46.7%) was having (4-6) years of experience in oncology wards.

Conclusion: The results showed that the majority of study sample reflect a moderate significance of knowledge in the measures taken by the nurse toward infection prevention, while showing low significance in patient teaching about infection prevention. In addition, there is a high significant relationship between nurses' knowledge and their years of experience and having training courses inside and outside Iraq.

Recommendations: The study recommended starting a set of specialized training courses concerning the infection prevention under the supervision of academic and practitioner experts and further guidelines of infection control must applied in medical wards at Baghdad teaching hospitals.

Keywords: Nurse, Knowledge, Infection Prevention, Leukemia.

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INTRODUCTION

The common feature of the leukemia is an unregulated proliferation or accumulation of white blood cells in the bone marrow. Patients with leukemia continuously develop fever, sweats (especially at night), and unintentional weight loss. Infections are most common reason for those clinical manifestations ⁽¹⁾.

Typically, patients with leukemia require immediate therapeutic intervention but most patients seek medical attention for symptoms related to anemia, infection, or bleeding ⁽²⁾.

The likelihood of bleeding, for undetermined reasons increased in patients developing fever and infection due to the lack of mature and normal granulocytes, all combined with the degree and duration of neutropenia; neutrophil counts that persist less than 100 cell/mm³ increase the risk of systemic infections, thus patients with leukemia always threatened by infection that continue to threaten their life ^(2, 3).

Regarding the care provided by the nurses for patients with leukemia, the major goals is to minimize the complications, reducing pain, improvement of healthy meals, absence of infection, and an understanding of the disease process and its treatment ⁽⁴⁾.

In order to prevent an infection, the chain of infection must be broken.to prevent the spread of infection to others and to minimize the effects of infection. The responsibility of prevention and management of infection is taken by all staff working in health and social care through the elements of patient safety program. In addition, it is obvious that nurses spend more time with patients by being involved in direct care ^(2, 5).

The standard precautions elements for infection prevention are hand washing, personal protective equipment (PPE), following aseptic techniques, and improving the physical environment routinely ⁽⁶⁾.

For this reasons, the researcher established this study to focus on the importance that the nurses caring with patients with leukemia should be able to handle infection prevention measures for providing the optimum nursing care.

AIM OF THE STUDY

The study aims to assess the nurses' knowledge about infection prevention for patients with leukemia and to find out the relationship between their knowledge and demographic characteristics (years of experience and training courses).

METHODOLOGY:

- Design:

- A descriptive study carried out at Baghdad teaching hospital and starting from September 7th, 2019 up to December 17th, 2019.
- A simple random sample of (30) nurses who were working in medical wards at Baghdad teaching hospital.

- Administrative Arrangement:

Series of arrangements have been done to obtain official permissions and facilities from the following; after getting the approval of the College of Nursing Council for the study. Been sent a detailed description including the objectives of the study has been to submitted to the Ministry of Health in Iraq, one permission were obtained from the College of Nursing, University of Baghdad and approved by Baghdad teaching hospital.

- Criteria of sample selection:

The sample selected according to the following criteria (adult nurse age 20-60 years), graduated from nursing high school, institute or college with at least one year of experience).

- **The study instrument:**

The questionnaire that used to collect the data and measure the variables consisted of two parts; the first part concerned with the nurses' demographic characteristics of (7) items (age, gender, marital status, educational level, years of experience, and specialized courses taken inside and outside Iraq). The second part concerned with nurses' knowledge prevention of infection which consists of (3) domains which include (30) items.

The first domain developed for monitoring signs and symptoms as an indication of infection, the second domain involves measures taken by the nurse towards infection prevention and the third domain is for the patient teaching about infection prevention.

- **Validity and reliability:**

Content validity of the questionnaire is determined through a panel of (11) experts they are faculty members of nursing college, university of Baghdad. A pilot study was carried out on the 13th, to 17th, September 2019. Determination of the reliability of the questionnaire was based upon the (test-retest) which has been (0.89) for (10) nurses. Data collected from (24th September to 19th October, 2019 by utilization of the study instrument and interviewing with the nurses.

- **Data analysis:**

Data analyzed through application of descriptive and inferential statistical data analysis approaches. This approach used for determining the following measurements; frequency (F), percentage (%), arithmetic mean, Pearson correlation coefficient and Chi-square. The instrument items were measured, scored and rated on a 3 level type Likert scale (3) for always, (2) for sometimes and (1) for never. These statistics were applied for the confirmation of association between the nurse's knowledge about infection control and his/ her demographic characteristics such as years of experience and specialized courses taken inside and outside Iraq⁽⁷⁾.

RESULTS:

The analysis of the data after being processed and tabulated, such presentation is systematically oriented relative to nurses and their demographic characteristic.

Table (1): Demographical Characteristic of nurses

Variables		
Age (years)	F.	%
20- 29 years	16	53.4
30- 39 years	6	20
40- 49 years	1	3.3
50- 59 years	3	10
60 years or more	4	13.3
Total	30	100
Gender		
Male	21	70
Female	9	30
Total	30	100
Marital status		
Single	12	40
Married	9	30
Divorced	3	10
Widowed	6	20

Total	30	100
Level of education		
Nursing high school graduate	13	43.3
Nursing institute graduate	9	30
Nursing college graduate	8	26.7
Total	30	100
Years of experience		
1-3 years	10	33.3
4-6 years	14	46.7
7-9 years	1	3.3
10 years and more	5	16.7
Total	30	100
Training courses inside Iraq		
Yes	17	54
No	13	46
Total	30	100
Training courses outside Iraq		
Yes	8	23
No	22	77
Total	30	100

Table (1) shows the demographic characteristic of (30) nurses indicated that the highest percent of nurses (53.4%) were within the age group of (20-29) year. Most of them (70%) were male, the highest percent (40%) were single, most of them (43.3%) were nursing high school graduates, and the highest percent (46.7%) were having (4-6) years of experience. Related to the training courses, about (54%) of them were taking courses inside Iraq while most of them (77%) did not take training courses outside Iraq.

Table (2): Mean of Score for Items Concerning with Nurses' Knowledge about Infection Prevention

Items	Always	Sometimes	Never	M.S.	Severity
Monitoring Signs and Symptoms as an Indication of Infection:					
Increase body temperature	6	24	0	1.80	MS
Feeling headache	3	27	0	1.90	MS
Throat sore	8	12	10	2.07	MS
Bradycardia	6	15	9	2.10	MS
Hypertension	6	20	4	1.93	MS
Hypotension	8	18	4	1.87	MS
Tachypnea	3	11	16	2.43	HS
Excessive sweating	4	7	19	2.50	HS
Diarrhea \ Constipation	4	13	13	2.30	MS
Pain in urination	7	2	21	2.47	HS

Measure Taken by the Nurse Towards Infection Prevention:					
Do not be near the patient unless it is necessary.	16	8	6	1.64	LS
Washing hands before any procedure.	25	4	1	1.20	LS
Isolate patient in private rooms.	10	18	2	1.73	MS
Wearing protective nose Mask.	12	18	0	1.60	LS
Wearing sterile gloves.	15	5	10	1.83	MS
Changing nose mask and gloves from patient to another	19	6	5	1.53	MS
Avoid Intramuscular injection.	11	14	5	1.80	MS
Avoid Intravenous injection.	13	13	4	1.70	MS
Do not be near the patient when feeling sick (like common cold).	7	21	2	1.83	MS
Sterilization of wounds across the patient's body.	10	4	16	2.20	MS
The Patient Teaching about Infection Prevention:					
Stay away from personal contact with others.	20	7	3	1.43	LS
Using personal equipment's in daily care.	14	10	6	1.73	MS
Washing hands before, after eating, and after toileting.	14	15	1	1.57	LS
Avoid crowded areas and diseased persons' (like common cold).	19	8	3	1.47	LS
Insure cleansing the anus after toileting.	7	22	1	1.80	MS
Cut nails carefully.	24	4	2	1.27	LS
Washing wounds with warm water and using antiseptics.	18	1	11	1.56	LS
Avoid uncooked food and vegetables.	20	4	6	1.53	LS
Take caution while using sharp and contaminated equipment.	4	21	5	2.03	MS
Report to the nurse / Physician when having sudden symptoms.	10	17	3	1.62	LS

M.S. = Mean of score, LS = Low severity, MS = Moderate severity, HS= High severity. Rating of severity (LS = 1- 1.66, MS = 1.67- 2.32, HS= 2.33- 3)

Table (2) reflects that the majority of sample reflect a moderate significance in items concerning with monitoring sign and symptoms of infection and the measures taken by the nurse toward infection prevention, while showing low significance in items of patient teaching about infection prevention.

Table (3): Association between Nurses' Knowledge and Their Years of Experience

Nurses' Knowledge				
Years of Experience	High	Moderate	Low	TOTAL
1-3 years	0	8	2	10
4-6 years	2	10	2	14
7-9 years	0	1	0	1
10 years and more	1	3	1	5
TOTAL	3	22	5	30
χ^2 Obs. = 32.357 , DF = 13 , $P \leq 0.05$, χ^2 Crit. = 23.362				

χ^2 Obs. = Observed Chi-Square, DF= degree of freedom, P= probability, χ^2 Crit.= Chi-Square critical

Table (3) shows that there is a moderate significant relationship between years of experience and nurses' knowledge about infection control.

Table (4): Association between Nurse's Knowledge and Training Courses Inside and Outside Iraq

Nurses' Knowledge Training Courses		High	Moderate	Low	TOTAL
Training Inside Iraq:	Yes	12	3	2	17
	No	9	1	3	13
TOTAL		21	4	5	30
Training Outside Iraq:	Yes	2	5	1	8
	No	2	16	4	22
TOTAL		4	21	5	30
1. χ^2 Obs. = 18.951 , DF = 13 , $P \leq 0.05$, χ^2 Crit. = 23.362					
2. χ^2 Obs. = 24.410 , DF = 13 , $P \leq 0.05$, χ^2 Crit. = 23.362					

χ^2 Obs. = Observed Chi-Square, DF= degree of freedom, P= probability, χ^2 Crit.= Chi-Square critical

Table (4) shows that there is a high significant relationship between nurses' knowledge about infection control and courses taken inside Iraq, while there is a moderate significance in having courses outside Iraq.

DISCUSSION

The distribution of the study sample showed that the majority of the samples were male, many similar studies agreed with that result, such as a study done by Jissir, (2014) who found that the male nurses' proportion increase in medical wards ⁽⁸⁾. While half of the sample were within age groups (20- 29 years), and most of them were single. These results agree with a study done by Abdullah, (2011) who found that half of his study sample was single and within the same age group. In addition, this is due to their young ages ⁽⁹⁾.

Most of the sample were graduated from nursing high school, this result disagree with a study done by Shinde and Mohita, (2014) who found that only third of the sample was graduated from nursing high school. This result is due to the presence of several nursing high schools for both males and females in the past with only one college of nursing in Baghdad City ⁽¹⁰⁾.

Regarding the years of nurses' experience, half of the sample was having (4-6) years of experience in caring of patients with leukemia this result disagrees with Saini et al., (2011) who had done a study on infection control among health care assistants ⁽¹¹⁾.

Another significant result regarding nurses' training courses revealed that about half of the study sample had training courses inside Iraq, while the majority of the sample did not take training courses outside Iraq. This result disagree with study done by Joy, (2012), who emphasized the necessity of local and international training sessions for keeping up with the latest methods and criteria for upgrading the nurses' knowledge concerning infection prevention, this result was due to the gradual decrease of training courses outside Iraq as an effect of the economic status of the country ⁽¹²⁾.

Also, the majority of sample reflect a moderate significance in items concerning with monitoring sign and symptoms as an indication of infection. This result agrees with Pavlovsky et al., (2009) who discussed the first line of chronic myeloid leukemia and found that nurses should have a moderate knowledge about infection control in order to be able to monitor the signs and symptoms ⁽¹³⁾. But, this result is disagree with Jissir., (2014) who listed that the nurses' knowledge most be at highest as possible to achieve better prevention of infection ⁽⁸⁾.

The studied nurses achieved high knowledge in items concerned with monitoring tachypnea, excessive sweating and pain in urination, which is not a significant symptom in monitoring presence of infection. French et al., (2013), supported this result ⁽¹⁴⁾.

The majority of sample reflect a moderate significance in items concerning with the measures taken by the nurse toward infection prevention, while showing low significance in patient teaching about infection prevention. These results disagree with Mehtar and Marais, (2011) who studied the policy to practice education in infection prevention and control ⁽⁶⁾. Such results are present because of decrease in nursing staff and the decrease in the specialized training courses and the huge numbers of patients with leukemia admitted to the medical wards at Baghdad teaching hospital (researcher).

There is also a moderate significant relationship between years of experience and nurses' knowledge about infection prevention. Saini et al., (2011) who had done a study on infection control among health care assistants support this ⁽¹¹⁾. On the other hand, Eskander et al., (2013) found that infection control delivered as a standard precaution for all nursing staff in selected Egyptian cancer hospitals even for nurses with less years of experience ⁽¹⁵⁾.

The results showed that there is a high significant relationship between nurses' knowledge about infection control and specialized training courses taken inside Iraq, while there is a moderate significance in having courses outside Iraq. Farmer et al., (2010) whose results reflected a positive relationship between healthcare staffs' knowledge and training, support the results of this study ⁽¹⁶⁾.

CONCLUSION

The study indicated that the majority of the study sample had moderate significance of knowledge in the measures taken by the nurse toward infection prevention, while showing low significance in patient teaching about infection prevention. In addition, there is a high significant relationship between nurses' knowledge and their years of experience and having training courses inside and outside Iraq.

RECOMMENDATION

On the basis of the study results and its interpretation this study recommends the following:

1. Starting a set of specialized training courses concerning the infection prevention under the supervision of academic and practitioner experts.
2. Further guidelines of infection control must apply in medical wards at Baghdad teaching hospital.
3. Performing additional session about infection prevention for patients with leukemia in order to provide additional care at home.

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