

How to Cite:

Al-gbury, A. L. W., & Khudur, K. M. (2022). Effectiveness of an interventional program on nurse's knowledge & practices concerning nursing management for leukemic patients after bone marrow aspiration and biopsy at blood diseases center in Medical City Directorate. *International Journal of Health Sciences*, 6(S1), 6473–6478. <https://doi.org/10.53730/ijhs.v6nS1.6369>

Effectiveness of an interventional program on nurse's knowledge & practices concerning nursing management for leukemic patients after bone marrow aspiration and biopsy at blood diseases center in Medical City Directorate

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Abstract---Introduction: An aspiration and biopsy of bone marrow is a procedure which done for patients may be have a blood disorder or a suspected or previously diagnosed blood malignancy. Bone marrow examination is done during the initial diagnosis and/or staging and used to determine treatment response in patients with leukemia, lymphoma, and other blood disorders. This study aimed to evaluate the effect of an interventional program on nurse's knowledge & practices related to nursing management for patients with Leukemia after bone marrow aspiration and biopsy at blood diseases center in medical city directorate. Material and Method: A pre experimental study design (one group Pretest-Posttest study design) on 20 nurses who work in bone marrow examination unit, it is carried out through the application of pre-test and post-test approach for the study group, from the period 13th June to 13th of December 2021. Three sessions were submitted to a study group that participate in an interventional program. The instrument was consist from three parts, the 1st is the nurses demographical characteristics, the 2nd assess nurses knowledge about bone marrow examination, and the 3rd deals with nurses practices about bone marrow examination.

Keywords---nurse knowledge, practice, management, bone marrow aspiration, and biopsy.

Introduction

Bone marrow examination (aspiration and biopsy) is an invasive rout to obtain the bone marrow fluids or piece of bone tissue for diagnosis. It is done during the initial diagnosis and/or staging and used to determine treatment response in patients with leukemia, lymphoma, multiple myeloma, and other blood disorders. (Grønkjær, et al., 2016) (Wiegand, 2016). In Bone marrow examination a special needle is inserted into the bone and marrow is collected through suction. Bone marrow sampling requires good technical skills to avoid complications and increase diagnostic yield (Obasi & Umpierrez De Reguero, 2019).

Contraindications to bone marrow biopsy and aspiration include severe bleeding such as severe hemophilia or severe disseminated intravascular coagulopathy. Thrombocytopenia is not a contraindication, and platelet transfusion can be performed if clinically warranted prior to the procedure (Suzuki, K., et al, 2019). Post-BMAB bleeding is very common because of the high vascularity of the sampled tissue. Rarely, retroperitoneal or gluteal hemorrhage can occur as result to injury of the internal iliac artery or superior gluteal artery. Any invasive procedure may be risk for infection, it can be reduced with good sterile technique and avoiding areas of superficial. Another risk is tumor seeding that must be explained to the patient if a biopsy is being performed at the site of a suspected metastatic lesion (Rindy& Chambers, 2020).

Material and Method

A pre experimental study design (one group Pretest-Posttest study design) on 20 nurses who work in bone marrow examination unit, it is carried out through the application of pre-test and post-test approach for the study group, from the period 13th June to 13th of December 2021. Three sessions were submitted to a study group that participate in an interventional program. The instrument was consist from three parts, the 1st is the nurses demographical characteristics, the 2nd assess nurses knowledge about bone marrow examination, this two part scored on a Likert scale with three levels of knowledge (wrong=1, not sure=2, and wright=3), and it is grading as (1-1.49) low knowledge, (1.5-1.99) moderate knowledge, and (2-3) good knowledge.

The 3rd part deals with observational check list for nurses practices about bone marrow examination and scored on two levels of practice as (not apply=1 and apply=2) and its grading as (1-1.24) not apply, (1.25- 1.74) sometimes apply, and (1.75-2) not apply.

Results

Table 1

Distribution of the Study Samples by Socio- Demographic Characteristics NO. =20.

No.	Variable	Frequencies	%
1	Gender		
1.1	Male	3	15
1.2	Female	17	85
2	Age (year)	Frequencies	%

2.1	22-25	11	55
2.2	26-30	3	15
2.3	30-35	3	15
2.4	36-40	2	10
2.5	41-45	1	5
3	Marital status	Frequencies	%
3.1	Single	12	60
3.2	Married	8	40
4.	Level of education	Frequencies	%
4.1	Secondary	8	40
4.2	Institute	10	50
4.3	College and above	2	10
5	Environment	Frequencies	%
5.1	City	20	100
5.2	village	0	0
6	Experiences years	Frequencies	%
6.1	less than 5 years	11	55
6.2	5-9	6	2.30

Continue table (1):

6.3	10-14	2	10
6.4	15-20	0	0
6.5	More than 20 years	1	5
7	Training courses	Frequencies	%
7.1	Yes	12	60
7.2	No	8	40
8	Training courses places	Frequencies	%
8.1	Iraq	10	50
8.2	Outside Iraq	2	10
8.3	No training	8	40
9	Training courses NO.	Frequencies	%
9.1	0	8	40
9.2	1	6	30
9.3	2	3	15
9.4	3	2	10
9.5	4	1	5

Through table (1) it can be observed that 85% of the study sample were females at age 22-25 years old, 60% of those were single, 50% were institute graduate, all of the study group were live in cities, 55% were less than 5 years as a experiences years, 60% were participate in training courses, 50% were their training courses in Iraq and 30% were participate in one training course.

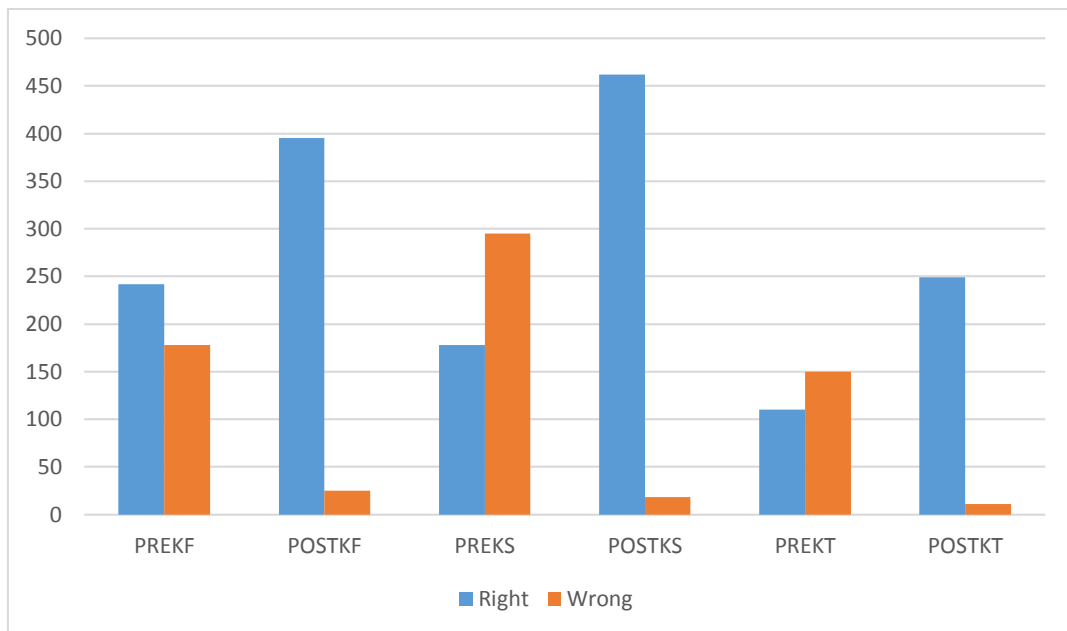


Figure 1. Shows Nurses Knowledge Pre- and Post-Interventional Program Domains

PREF. = pre knowledge first domain, *PRES.* = pre knowledge second domain, *PRET.* = pre knowledge third domain

The figure shows the effectiveness of interventional program concerning the nurse's knowledge toward Bone Marrow Aspiration and Biopsy interventional program which presented that the post program nurses knowledge was elevated than pre interventional program.

Table 2

The Differences between the Nurse's Practice Pre- Interventional Program and Post- Interventional Program

Items	Mean	Std. Deviation	t	P value
Preprogram nurses practices mean	1.378	0.077		
Post program nurses practices mean	1.842	0.063		
Pre practice mean- post practice mean	-0.463	0.062	- 32.892	0.000 H.S

Std. Deviation = Standard Deviation, *t.* = *t* test, *P value* = ≤ 0.05 , *H.S*= high significant.

Table (2) reveals that was a high significant difference between the level of nurse's practice pre-interventional program and post-interventional program at $P \leq 0.05$.

Discussion

The study was not similar in setting and methods to previous peer-reviewed studies. Through table (1) findings it can be observed that 85% of the study sample were females at age 22-25 years old, all of the study group were live in city, and 60% of those were single, these findings agree with Hashem, H. J., & Hassan, H. B. (2018). Most of the nurses who participate in the study were graduates of the institute, and they made up 50% of the total nurses participating in the study, this results similar with Mardan, R. S., & Mohammed, S. J. (2019). The years of experiences of the study sample was less than 5 years which mean that 55% of the study sample, this results supported by Hamel, O. L., & Ahmed, S. A. (2020). The nurses who participate in the study and participate in training courses were 60%, 50% of those nurses participate their training courses in Iraq and 30% of nurses participate in one training course. Those findings supported by Mardan, R. S., & Mohammed, S. J. (2019).

The effectiveness of interventional program concerning the nurse's knowledge toward Bone Marrow Aspiration and Biopsy interventional program showed in figure 1 which presented that the post program nurses knowledge was better than pre interventional program and this results supported by Najm, M. A., & Hassan, H. B. (2016).

The differences between the level of nurse's practices pre and post-interventional program at $P \leq 0.05$ showed in table (2) which were that high significant difference between the level of nurse's practices regarding the pre and post interventional program at $P \leq 0.05$ and this results supported by Hamel, O. L., & Ahmed, S. A. (2020)

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