RESEARCH ARTICLE

Evaluation of Nurses Knowledge about Diagnostic Bone Marrow Aspiration and Biopsy at Blood Diseases Center in Medical City Directorate

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ABSTRACT

Background: An understanding of bone marrow aspiration procedure and diagnostic tests aid oncology nurse and oncology nurses to provide good patient care and an advanced practice nurses in the oncology units must take their important role in the development and implementation of clinical practice protocols for bone marrow aspiration and biopsy.

Objectives: The study aimed to evaluate of nurses knowledge about diagnostic bone marrow aspiration and biopsy.

Methods: The study carried out at Blood diseases center in medical city directorate. A cross-sectional study was conducted. A purposive (Non probability) sample of (20) nurses are selected. The questionnaire (68 questions) consist from two parts, the 1st is the nurses socio-demographical characteristics (9 questions) and the 2nd assess nurses knowledge about bone marrow examination (21) about leukemia, (24) about bone marrow overview and (13) about bone marrow aspiration and biopsy procedure, the questionnaire developed from literature and expert input, and validated by (10) experts and one pilot study, was used to evaluate nurses' knowledge about diagnostic bone marrow aspiration and biopsy.

Results: After fill the nurses a study questionnaire, the findings reveals that the nurses have a moderate level of knowledge about diagnostic bone marrow aspiration and biopsy.

Recommendation: education, Instruction, and intervention programs should be designed for all nurses who work in oncology units and centers to improve their knowledge about the management of diagnostic bone marrow aspiration and biopsy.

Keywords: Evaluation, nurse knowledge, management, bone marrow aspiration, and biopsy.

Introduction:

An understanding of bone marrow aspiration procedure and diagnostic tests aid oncology nurse to provide a good patients care and an advanced practice nurses in the oncology setting must take their important role in the development and implementation of clinical practice protocols for bone marrow aspiration and biopsy (Lidén, Y., et al., 2012)

Bone marrow aspiration requires good technical skills to avoid complications and increase diagnostic yield (Ishihara, et al., 2013).

An examination of bone marrow is performed before, during and after treatment for patients with acute and chronic leukemia to determine patient response to treatment and confirm a pa¬tient's possible remission (Jackson, et al., 2012).

Bone marrow aspiration and biopsy should be performed only by physicians, advanced practice nurses, and other healthcare professionals (including critical care nurses) with additional knowledge, skills, and demonstrated competence per professional licensure or institutional standard (Rindy, L. J., & Chambers, A. R. (2020).

Local or general anesthesia or minimal requirement for sedation in bone marrow aspiration is needed. The better site of aspiration is usually the iliac crest, or the sternum. The upper tibia is better site for in bone marrow aspiration in children under one year of age, because it still contains a substantial amount of red bone marrow (Panchbhavi, 2017).

Bone marrow examination is an invasive procedure in which bone marrow samples are taken from the anterior or posterior iliac crest, or sternum by a needle. Bleeding prevention at the puncture site is necessary (Lee SH., et al., 2021).

The procedure is performed usually while the patient is positioned in the prone or lateral (side-lying) position. Routinely, an aspirate is obtained from the soft (spongy) portion of the bone and Biopsy can obtained with the use of a trephine coring needle either manually or with a power drill device (Wiegand, 2017).

The complications associated with bone marrow biopsy and biopsy are rare (0.05%). The most common and most serious complication is hemorrhage, infection, arteriovenous fistula (AVF), and trauma (Berber, et al., 2014).

METHOD

A cross-sectional study was conducted and carried out at Blood diseases center in medical city directorate. A purposive (Non probability) sample of (20) nurses are selected. The questionnaire (68 questions) consist from two parts, the 1st part deal with the nurses socio-demographical characteristics (9 questions) and the 2nd part is to assess nurses knowledge about bone marrow examination (21 questions) about leukemia, (24 questions) about bone marrow overview and (13 questions) about bone marrow aspiration and biopsy procedure.

The questionnaire developed from literature and expert input, and validated by (10) experts and one pilot study, was used to evaluate nurses' knowledge about diagnostic bone marrow aspiration and biopsy.

These questions are rated according to the Liker's scale; right (3), not sure (2), wrong (1), the levels of scale which are scored as a total of three episodes of events are observed for each respondent.

Reliability of the questionnaire was used to determine the accuracy of the questionnaire since the results showed a good level of stability and internal consistency (0.789 by Cronbach s' Coefficient alpha) of principle parts concerning item's responses' of the questionnaire. The mean of nurses' knowledge answers scoring as (1-1.49) low knowledge, (1.5-1.99) moderate knowledge, and (2-3) good knowledge.

Statistical analysis

Statistics tables including. Observed Frequencies, percentage, Mean of score (MS), Standard Deviation (SD), T-test used to determine the differences between two means at $P \leq 0.05$ and Analysis of Variance (ANOVA) used to determine the significance of the association between nurses socio-demographic and knowledge questionnaire.

RESULTS

Table 1: Distribution of the Study Samples by
Socio- Demographic Characteristics NO. =20.

No.	Variable	Frequencies	%
1	**Gender**	**Frequencies**	**%**
1.1	Male	3	15
1.2	Female	17	85
2	**Age (year)**	**Frequencies**	**%**
2.1	22- less than 26	11	55
2.2	26- less than 30	3	15
2.3	30- less than 36	3	15
2.4	36- less than 40	2	10
2.5	41-45	1	5
2.6	Mean = 27.75		
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 - less than 10	6	2.30
6.3	10 - less than 14	2	10
6.4	15 - less than 20	0	0
6.5	20 years or More	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

Table 2: Distribution of the Nurse's Knowledge and Practices Pre-Interventional Program NO. =20.

NO.	Knowledge	Frequencies	Percent %
1	Low knowledge	2	10 %
2	Moderate knowledge	11	55 %
3	Good knowledge	7	35 %
4	Total	20	100 %

Table 3: Distribution of the Nurse's Knowledge by the Knowledge Domains NO. =20.

NO.	Knowledge Domains	Nurses Knowledge Answer	F.
1	Knowledge About Leukemia Domain	wright	242
		Wrong	178
2	Knowledge About Bone Marrow Domain	wright	178
		Wrong	302
3	Knowledge About Bone Marrow Procedure Domain	wright	111
		Wrong	149
4	Total = 1160	wright	531
		Wrong	629

Table 4: Association between the Nurse's Knowledge and Socio-Demographical Characteristics.

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Socio-Demographical Characteristics - Nurse's Knowledge mean	Knowledge level		
	Statistical test F	P value	Sig.
Educational Level –Nurses Knowledge mean	0.389	0.909	N.S
Experience Years –Nurses Knowledge mean	1.706	0.367	N.S
Participate in training Courses – Nurses Knowledge mean	1.613	0.388	N.S
Age groups - Nurses Knowledge mean	0.780	0.686	N.S
Gender - Nurses Knowledge mean	0.530	0.828	N.S
Marital status - Nurses Knowledge mean	1.163	0.518	N.S

DISCUSSION

Throughout the course of the data analysis in table 1 of shows that the 85% of the study group were females, this result supported by Abdo, N. M., et al., (2020) in their study which were 60.9 % of the study participants were females.

The majority of participants' age group of the present study were at (22-less than 26) years old and this finding similar the result of Yassin, A., & Mansour, K. (2021), their results were (20-29) year old.

The present study sample 60% were single person, this finding is supported by Hashem, H. J., & Hassan, H. B. (2018) in their study which conduct on 60 college students' were 80% of single too.

Most of participate in the current study were graduates of the institute, and they made up 50% of the total nurses and this results of agree with Mardan, R. S., & Mohammed, S. J. (2019).

Most of the study sample was live in city and this results supported by Hashem, H. J., & Hassan, H. B. (2018), The years of experiences of the study sample was less than 5 years and this results supported by Hamel, O. L., & Ahmed, S. A. (2020), The nurses who 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) in their which were 57.5 % training course in Iraq.

Evaluate the nurse's knowledge can be observed in table (2), 11 (55%) nurses knowledge was moderate, followed by good knowledge (7) (35%), while the minimum value was (2) (10%) in low knowledge and, this finding supported by the results of Mardan, R. S., & Mohammed, S. J. (2019) which were nurses (75 %) fair level of knowledge.

The study results in Table 3 shows that the nurses wrong answer about knowledge domains were (629) more than wright answers (531). These answers mean that the nurses' knowledge at moderate level and this findings supported by Mahmood, W. A., & Khudur, K. M. (2020), which reveal that the nurses' knowledge were poor level.

The presents study findings as in table 4 reveals that were no significant association between the nurse's knowledge means and socio-demographical characteristics. The results of table 4 supported by Yassin M. A. & Hassan H. B., (2020), in their study which reveals that were no significant association between patients' knowledge and socio-demographical characteristics.

CONCLUSIONS

The nurses have a moderate level of knowledge about diagnostic bone marrow aspiration and biopsy.

ETHICAL CONSIDERATIONS COMPLIANCE WITH ETHICAL GUIDELINES

Ethical permission was obtained from the Director of Blood diseases center to ensure their approval and to facilitate the researcher's work. The nurses were informed about the research's goals and ensured anonymity and confidentiality of the information. A written informed, voluntary participation consent was obtained from each participant.

AUTHOR'S CONTRIBUTIONS

Study concept: Dr. Khalida M. Khudur; Writing the original draft Abbas Labeeb Wadi Al-gbury; Data collection: Data analysis: Abbas Labeeb Wadi Al-gbury Reviewing the final edition: All authors.

References:

Abdo, N. M., Ramadan, M. A., Tosson, M. M., & Al-Fadhli, M. A. (2020). Effectiveness of An Educational Program on Knowledge and Practices Regarding Care of Central Venous Catheters among Dialysis Nurses. Egyptian Journal of Community Medicine, 38(1), 1-11.

Hamel, O. L., & Ahmed, S. A. (2020). Effectiveness of an Educational Program on Nurses' Knowledge and Practices Regarding Nursing Interventions of Chest Tube Drainage System in Ibn Alnafees Teaching Hospital. Indian Journal of Public Health Research & Development, 11(4).

Hashem, H. J., & Hassan, H. B. (2018). Effectiveness of an Instructional Program on Basic Education College Students Knowledge concerning risk of blood hyper viscosity among young adulthood at University of Sumer in Thi-Qar governorate.

Lidén, Y., Olofsson, N., Landgren, O., & Johansson, E. (2012). Pain and anxiety during bone marrow aspiration/biopsy: Comparison of ratings among patients versus health-care professionals. European Journal of Oncology Nursing, 16(3), 323-329.

Mahmood, W. A., & Khudur, K. M. (2020). Effectiveness of an Educational Program on Nurses' Knowledge and Practices Concerning Nursing Management of patients' with Vascular Access in Dialysis Centers at Baghdad Teaching Hospitals. Indian Journal of Forensic Medicine & Toxicology, 14(3).

Mahmood, W. A., & Khudur, K. M. (2020). Effectiveness of an Educational Program on Nurses' Knowledge and Practices Concerning Nursing Management of patients' with Vascular Access in Dialysis Centers at Baghdad Teaching Hospitals. Indian Journal of Forensic Medicine & Toxicology, 14(3).

Mardan, R. S., & Mohammed, S. J. (2019). Effectiveness of an Education Program on Nurses' Knowledge and Practice toward Nursing Management for Patients with Leukemia who are Undergoing Chemotherapy in Baghdad Teaching Hospital. Indian Journal of Public Health Research & Development, 10(10).

Rindy, L. J., & Chambers, A. R. (2020). Bone Marrow Aspiration And Biopsy. In StatPearls [Internet]. StatPearls Publishing.

Yassin M. A. & Hassan H. B., (2020). Effectiveness of an Instructional Program Concerning Non-Pharmacological Guideline on Controlling Essential Hypertension among Patients at AL-Sader Hospital in AL-Najaf AL-Ashraf City. Iraqi National Journal of Nursing Specialties, 33(1), 93-103.