



Nurses Knowledge Regarding Safety Measures for Children with Acute Lymphoblastic Leukemia

معرفة النظميين في لوقت عتدابير لالة لالطالطاب ياب ي ضاض لدلالي فباوي الاحاد

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Abstract

Background: Self-efficacy in diabetes management means a person's belief in his or her skills to properly care for diabetes and keep it under control. The study aimed to assess the nurse's knowledge regarding safety measures for children with acute lymphoblastic leukemia; and determine the associated socio-demographic characteristics.

Methods: A descriptive cross-sectional study design was conducted at Central Children's and Child's Protection Hospitals in Baghdad city, for the period of October 1st, 2023 to March 4th, 2024. The study sample consist of 50 nurses is selected according to nonprobability sampling approach. The questionnaire, consisting of 32-items measured on MCQ, was validated by experts and tested for reliability through a pilot study. Data collection involved self-report, and both descriptive and inferential statistical analyses were applied for data analysis.

Results: Results indicated that 62% of nurses involved in the care of children with acute lymphoblastic leukemia had poor knowledge. Kruskal-Wallis analysis revealed significant differences in nurses' knowledge based on age ($p=0.045$), education level ($p=0.000$), training courses attended ($p=0.000$), and years of experience in hematology centers ($p=0.001$).

Conclusions: The study reveals an alarming lack of knowledge of nurses influenced by factors such as age, education, training and years of experience. Accordingly, ongoing training initiatives that address specific variables must be implemented to enhance nurses' competency and understanding of safety measures for this group of patients in health care institutions.

Key-wards: Nurses Knowledge, Safety Measures, Acute Lymphoblastic Leukemia.

Introduction

Acute lymphoblastic leukemia (ALL) is otherwise known as acute lymphocytic leukemia which is a type of blood cancer that progresses quickly and develops in the blood and bone marrow. It is the lymphocytes, which are the class of white blood cells that play a crucial role in the immune system that are mostly affected [1]. ALL is the leading type of childhood leukemia, which is also the most prevalent, about 75-80% of leukemia in children [2]. On the other hand, it is possible for adults to develop it too, but is rather rare. The annual incidence of ALL is expected to be around 1-2 cases per 100,000 persons globally. However, different population groups and age groups have variations of these figures [3]. Nurses are at the forefront of all healthcare providers when considering the care, safety and well-being of children with ALL. Hence, they must be able to grasp risk management strategies that are peculiar to this group of people.

Nurses are experienced as frontline healthcare providers who ensure the provision of continuous care to children diagnosed with ALL. They also offer the holistic approach that cares for the wellbeing of the patient and the family members. The comprehensive knowledge of safety measures can be considered as top priority as these children are susceptible to infections, treatment-related complications and the consequential long-term effects of therapy [6]. The true position is that knowledge in the right amount helps nurses to foresee, prevent, and tackle adverse events which in turn makes the quality of care good and reduces the potential hazards.

There have been several studies which reaffirm the significance of continuous education and retraining of healthcare professionals including nurses to be in sync with the improvements in the management of pediatric cancers [8]. In the context of ALL, this means keeping oneself up-to-date with current evidencing based guidelines on infection control, medication administration, and also monitoring treatment side effects. Also in this chapter, the authors explain that the nurses who undergo continuous training are more likely to

apply established safety procedures, suggesting the direct correlation between knowledge and practice [9].

These challenges associated with the care of ALL children are extensive, as they not only include dealing with the medical complexity of the disease, but also the psychosocial implications, which have a great impact on the health of the child and the family. As nurses, who are the mainstay of the healthcare team, must be up-to-date and well-informed about the challenges they frequently face, and thus, ensure that they follow a patient centered approach [11]. Therefore, this study aimed to assess the nurse's knowledge regarding safety measures for children with acute lymphoblastic leukemia in Baghdad Teaching Hospitals/ Iraq.

Methods:

Design:

A descriptive cross-sectional study design was adopted by constructed questioning individuals of the study population with the sole purpose of describing the examined phenomena in terms of its nature and degree of presence was conducted during the period from October 1st, 2023 to March 4th, 2024.

Study sitting:

Central Children's and Child's Protection Hospitals in Baghdad city, where that hospital was decided to be a primary place for collecting data. Non-probability Convenience sampling which is the type of sampling method considering the representativeness of the data to be collected was employed among total of 50 nurses. This sample were selected according to set of criteria include nurses who work in leukemic children, nurses who different educational attainment and those who are agree to participated in current study.

Study instruments:

This questionnaire consists of two part include the socio-demographic characteristics include nurses age, education level, marital status, number of training courses, years of experience in hematology center and sources of information. Nurses knowledge was assessed using constructed

questionnaire building according to the previous literature and studies. It comprises 32-items measured on a MCQ, yielding a potential score range of 0-32. A higher average indicates a good knowledge. The questionnaire was validated by experts and then its reliability was verified through a pilot study. The Cronbach-alpha value in current was 0.81 which indicate the higher reliability.

Data collection

The researcher interviewee the participants at their workplace, explained the instructions, answered their questions regarding the form, urged them to participate and thanked them for the cooperation. The self-report techniques were used on individual bases, and each report (15-20) minutes after taking

the important steps that must be included in the study design.

Statistical analysis:

Data collection from the sample was carried out using SPSS-24 and MS Excel (2010), which were later analyzed using the statistical analysis tool. The presentation was descriptive and was done through tables, averages and standard deviation whereby data was presented and analyzed. To determine the average scores, the researcher also created categories using the mean as the foundation and used such terms as poor, moderate, and good. The inferential strategy entailed performance of the statistical analysis tools including the Kruskal-Wallis analysis. The most common significance level was set to be 0.05.

Results:

Table (1): Socio-Demographic Characteristics

SDVs	Classification	No.	%
Age	20 24	16	32.0
	25 to 29	24	48.0
	30 and more	10	20.0
	<i>Min.- Max.</i>	23-39	
	<i>Mean± SD</i>	29.09±11.07	
Education level	School Nursing	4	8.0
	Diploma Nursing	23	46.0
	B.Sc Nursing	16	32.0
	Post-graduated	7	14.0
Marital status	Single	7	14.0
	Married	38	76.0
	Divorced	5	10.0
Training courses	No	34	68.0
	1 course	11	22.0
	>1 courses	5	10.0
Duration of work in Hematology	1 to <3 yr	35	70.0
	3 < 5 yr	8	16.0
	≥5 yr	7	14.0
Sources of Information about Patients Safety	No	37	74.0
	Physician	6	12.0
	Colleagues	5	10.0
	Internet	2	4.0

No. Number; %= Percentage

Findings from the study reveal a diverse age range within the sample, spanning from 23 to 39 years,

with an average age of 29.09±11.07 years. Regarding educational background, a significant

portion of participants held diplomas (46.0%). Marital status analysis indicated a predominance of married individuals (76.0%). In terms of training courses, the majority (68.0%) did not attend any. Exploring years of professional experience, a

substantial portion (70.0%) reported having less than 3 years. When it comes to sources of information about patient safety, a significant percentage (74.0%) did not have any identifiable sources.

Table (3): Overall Nurses Knowledge

Scale	M	SD	Score	No.	%
Nurses Knowledge	8.96	7.915	Low	31	62.0
			Moderate	15	30.0
			High	4	8.0
			Total	50	100.0

Level of Assessment of Σ mean (Poor= 0-10.66; Fair= 10.67-21.33; Good= 21.34-32)

The study's results suggest that a significant proportion (62%) of nurses who in care of children with ALL were indicated poor knowledge, as

evidenced by their comparatively low average scores (8.96 ± 7.915) on the knowledge assessment scale.

Table (3): Statistical Differences in Nurses Knowledge with regard Socio-demographic Characteristics

Variable	Ranks			Mean differences	d.f	Sig.
	Rating	No.	Mean Rank			
Age/ years	20-24	16	26.00	5.785	2	.045
	25-29	24	21.42			
	≥ 30	10	34.50			
Education level	School Nursing	4	11.75	27.527	3	.000
	Diploma Nursing	23	16.70			
	B.Sc Nursing	16	34.09			
	Post-graduated	7	42.64			
Marital status	Single	7	26.36	5.537	2	.096
	Married	38	27.21			
	Divorced	5	11.30			
Training courses	No	34	18.57	26.225	3	.000
	1 course	11	36.82			
	>1 courses	5	47.70			
Years of experience	1 to <3 yr	35	21.04	14.387	2	.001
	3 < 5 yr	8	29.50			
	≥ 5 yr	7	43.21			
Sources of information	No	37	25.24	3.928	3	.269
	Physician	6	34.50			
	Colleagues	5	17.40			
	Internet	2	23.50			

No. = number; sig. = significant level at 0.05.

The Kruskal-Wallis analysis suggests that there were statistically significant differences in nurse's knowledge towards safety measures for children with acute lymphoblastic leukemia between groups

of age ($p=0.045$), education level ($p= 0.000$), training courses ($p= 0.000$) and years of experience in hematology center ($p= 0.001$).

Discussion:

Socio-Demographic Characteristics of the Study Sample:

The results discussed in the current are a detailed appraisal of the nursing features for patients diagnosed with acute lymphoblastic leukemia (ALL) in the context of safety measures. The study mentions the fact that the study group and the control group have a comparable range of ages among nurses, for example, they are between the age of 23 and 37 in the study group and between 24 and 39 in the control group. In respect to the age, the mean age data were not statistically different between both groups. The average age of the study group was 29.09 ± 11.07 while the control group was 29.14 ± 12.07 years old. Therefore, the participants in both groups are young and have similar mean ages. This notion is very essential in understanding the relative influence of factors like geography, professional experience, and ability to get assimilated with new medical standards. The study also makes reference to a similar research that has been conducted, which has been found to be a common phenomenon among pediatric nurses, thereby showing the need for nurses to understand how the peculiarities of young nurses can lead to better care [12, 13].

The study underlines that the main differentiator among the respondents is the educational background, where 72.0% of the participants from the study group are diploma holders and 52.0% of those under control have Bachelor's degrees. These differences in education empower nurses to be experts, to make critical thinking, and to take decisions. The level of diversity in educational backgrounds is treated here as the most important factor in the process of tailoring intervention and training programs based on the requirements of different nursing areas. Similar to other study findings, these results highlight the critical component of diversity education to facilitate the development of better nursing practices and training programs [13, 14].

The marital status findings show differences between the research and control groups, evidenced by the fact that 60.0% and 88.0% of

nurses are married in the study and control groups, respectively. Understanding marital status' impact on work performance, stress levels, and work-life balance is crucial to the creation of the required support systems and interventions for healthcare professionals. Similar figures illustrate that the majority of nurses are married in maternity hospitals in Baghdad, which may be attributed to the age group of the nurses as well as one of the main factors behind this trend [16],

The investigation deals with the question of the number of training courses which healthcare workers are taking part in, in particular, in pediatric hematology. The results indicate that 84.0% and 56.0% of the respondents from the both the groups have never participated in any training sessions so far. This could be a cause for concern about the professional development pipelines for both the interns and the employees. The study highlights the concern of the fact that physician and other health professionals in pediatric hematology should be thoroughly trained and only skilled ones should be allowed to work in this specialty. The obtained results are in accordance with other studies focused on nurses' own view on child chemical poisoning [17], or neonatal endotracheal suctioning procedures [18], a concerning trend that demands immediate addressing and improving of the competence of nurses in their special area of expertise.

The time duration of working in a hematology center is paramount in the evaluation of the level of nursing experience. An approximately equal percentage of participants in both groups had 1 to less 3-years of experience, representing the study group of 88.0% and control group of 60.0%. Due to the short period of time of this experience, it is clear that there must be strategies developed to mentor and support these nurses. These strategies should facilitate a seamless transition into their jobs and duties [19-21].

Nurses Knowledge:

The research result confirms a pressing issue in the medical world, that is, medical care of children who are suffering from Acute Lymphoblastic Leukemia (ALL), in particular. According to this

research, we can say that nearly half of nurses who were caring for these children had poor knowledge in this area. A study showed that 62% of the nurses lacked adequate knowledge, which was evident from the fact that they scored a remarkably low mean on the knowledge assessment scale, which was at 8.96 ± 7.915 . The fact that they come to this conclusion points to that the current training and educational programs for nurses are not performing effectively in this regard.

As a result of these study findings, a possible result is that the quality of care which the children with ALL will receive will be affected. The nurses' knowledge level is one of the key factors affecting the quality of care that patients receive, since it plays a vital role in the entire healthcare team. A limited knowledge of nurses may result in suboptimal treatment, and the wellness and recovery of pediatric patients with ALL can be affected. The study recommends that specialized training, which can be done through targeted interventions, is needed for nurses to acquire more knowledge in this area.

The gap in the knowledge of nurses looking after kids with ALL becomes a key issue which demands an evaluation of the existing educational strategies. In this way, it implies that the existing programs in pediatric oncology may not provide the necessary specificities of the specialty. In this sense, our work also supplements the previous findings, stressing the need for a specialized curriculum that addresses the particularities and complexities of pediatric oncology [22, 23]. Hence, this study serves to verify the need to reassess the curricula and to improve nurses' training program in order to furnish them with all the knowledge and skills needed for the best care in pediatric oncology settings.

Consequently, the study's results may give rise to other issues surrounding what could have been contributing factors to the observed knowledge gaps among the nurses. Factors like interruption in continuing professional development, access to updated resources, and inadequate support systems are probably the ones that cause nurses to have a poor knowledge of how to care for the

children with ALL. The primary step is to identify and treat the root causes of such deficiencies. The solutions that will then be worked out will be directed at correcting the identified issues and therefore bringing about the desired improvements of pediatric oncology patient care [24].

Nurses Knowledge and Socio-demographic Characteristics:

The study revealed remarkable results that were significant at $p=0.045$ which involved nurses' knowledge of safety measures for children with acute lymphoblastic leukemia, and these results differed across the age groups. It means that the aging process is that one of the determinant factors which affects nurses' awareness about the safety procedures employed in the context of nursing when the patients being pediatric patients suffer from this particular medical condition. As the findings indicate, the age factor leads to discrepancies in medical workers' knowledge and techniques as documented in previous studies [25, 26]. The statistically significant link between age and nurses' knowledge reveals the necessity for age-specific educational interventions for different age groups nursing workforce to guarantee that all nurses have access to up-to-date, all-encompassing information that wears for children undergoing acute lymphoblastic leukemia treatment.

The study results are highly meaningful in the fact that they demonstrate a strong association between nurse education with safety measures knowledge of children with ALL. The statistical analysis of the data resulted in the P-value of 0.000, which is a strong enough association. Therefore, this result is supported by previous literature that pointed out the importance of education for improvement of healthcare professionals knowledge and practice [27, 28]. Nurses holding the higher degrees of education possessed the deeper knowledge about the measures of safety for children suffering from ALL, which in turn reflects the great value of the academic learning for the continuous development of professional skills. In this respect, tailored programs addressing the educational needs of nurses in paediatric oncology might largely be

instrumental in improving patient safety and care outcomes.

The study results have given a convincing C-shaped correlation between the amount of training sessions provided to nurses and their knowledge level about safe practices for children with ALL. The statistical exposure demonstrated a highly significant variance between the groups with different levels of training ($p=0.000$). This emphasizes the central role of training in improving nurses' knowledge and understanding related to safety procedures especially for patients with ALL but are younger. It is in line with the earlier studies which point to the educational and training as some of the most important things that healthcare professionals' mastery depends on when it comes to dealing with and treating people with unique health needs [29, 30]. The results demonstrate that the ongoing training may be one of the factors that affecting the knowledge acquisition, which, in turn, gives the quality of care for children with ALL to improve. The future endeavors and programs for education should have training facilities that will ensure that nurses are continually updated and proficient in dealing with the wide range of challenges that come with pediatric oncology.

The research has shown significant association between nurses' knowledge about safety measures for children with acute lymphoblastic leukemia and their experience in a hematology center after being in service for some years. Statistical analysis showed that there was a difference significant in the experience years among groups with a value of $p 0.001$. This is a hint that the nurses gain more experience as they work in hematology, their understanding of safety measures for pediatric acute lymphoblastic leukemia increases gradually. This is in line with research findings which show how experience plays a big role in the enhancement of nursing knowledge and skill [31,32]. The fact that the significant association has been identified indicates the utmost significance of the tailored training, and the continuous education of nurses, especially the younger ones, for their targeted instruction about the measures of safe management of patients with

acute lymphoblastic leukemia in the center of hematology.

Conclusions:

The study reveals a worrying lack of knowledge among a large proportion of nurses who care for children with acute lymphoblastic leukemia. The statistically significant differences identified in knowledge levels based on age, education level, training courses, and years of experience highlight the need for targeted interventions and educational programs designed to address these specific factors. It is recommended that healthcare institutions implement ongoing training programs and educational initiatives, focusing on specific variables, to improve nurses' knowledge and competence in safety measures for this patient population.

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