Knowledge and practices of nurses about Acute lymphoblastic leukemia in children in National Cancer

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Abstract:

Background: Standard Nursing care of leukemic children considered the major contributor to increase survival and improved quality of life.

Material and Methods: This descriptive study aimed at assessing oncology pediatric nurses knowledge and practices about acute lymphoblastic leukemia in children at National Cancer Institute. Wad Medani.

The study sample included (35) nurses during the period of the study (from April to October 2019) .

The data was collected by using a questionnaire and observation check list designed for the study .

The data analysis was performed by using statistical package for social sciences (SPSS).

Results: The results showed that 71.4% of nurses aged between 20 – 30 years and they have little experience (1 - 5) years on oncology unit 65.7% . The majority of them didnot attended training program about acute lymphoblastic leukemia (82.9%). About 68.6%, and 76.5% identified about the definition and treatment of acute lymphoblastic leukemia , while 91.4% , 74.3% and 100% of nurses performance the care was incorrectly as cannulation, Nasogastric intubation and gave intravenous antiemetic respectively. no one wash hands but all of them wear the gloves.

Conclusion: The study concluded that the nurse's knowledge about acute lymphoblastic leukemia was adequate while their clinical performance were relatively incorrect in many skills. The study recommended that more educational and training program for these nurses must be applied by well trained oncology nurses team. Also continuous supervision for nurse's performance must be done.

Keywords: nurses- pediatric- acutelymphoblastic leukemia

Introduction

Cancers form one of the major causes of death in children between the ages of one and 15 years. They differ markedly from adult cancers in their nature, distribution and prognosis. The patterns of childhood cancers in America and Europe are almost the same, with leukemia and central nervous system tumors accounting for over one-half of new cases. In contrast lymphoma is the most prevailing cancer of this age group in Africa (Huda M. Haroun, 2006).

Leukemia is the cancer of the blood cells. Its start in the bone marrow it's group of malignant disease characterized by uncontrolled proliferation of the precursors of white blood cells (WBCs) (Gamal N 2007). Leukemia are a complex collection of diseases that were first described in 1845 by Virchow, he described a condition in which the relationship between red and colorless corpuscles--- was the reverse of normal. He coined the term 'weiess blut' or 'white blood' (Gulati G 1988).The two major classification of Leukemia are acute and chronic. These two types of Leukemia are similer in that they are the products of dysfunctional bone marrow, but they differ dramatically in disease presentation, treatment and prognosis. The cell line of origin can characterize acute and chronic Leukemia as myeloid or lymphoid. An understanding of any Leukemia must begin with knowledge of normal bone marrow function (Shirley E. 2001).

1.2: Problem statement

Child hood Acute Lymphoblastic Leukemia (ALL) was the first disseminated cancer shown to be curable and as such represented to model malignancy for the principles of cancer diagnosis, prognosis, and treatment. it's actually a heterogeneous group of malignancy with a number of distinctive genetic abnormalities that result in varying clinical behaviors and responses to therapy (Nelson, 2004).

1.2.1 World wide studies

In 2000, approximately 256,000 children and adults world wide developed a form of leukemia, and 209,000 died from it. Leukemia was the 12th most common class of neoplastic disease, and the 11th most common cause of cancer related death.(Mathers, Colin D et al 2001).

1.2.2 Developed countries studies

About 3.000 children in the United States (US) and 5.000 children in Europe are diagnosed with ALL each year. The peak incidence of ALL occurs between age 2 and 5 years. (Rizzari C, et al 2004).

Among children with some form of cancer, about one third have a type of leukemia, most commonly ALL.(Leukemia Facts &Statistics 2009).

Studies done in Sudan

There is paucity of information on childhood cancer from Sudan with the last studies published more than 20 years ago. Study done by Abuidris 2006 aimed to provide a current picture of childhood cancer in Sudan. Data was obtained from the hospital registry for the period May 1999 to June 2007 on all pediatric patients presenting to the institute of nuclear medicine and oncology, University of Gazira,Wad Madani, Sudan. There were 322 children with cancer during this time period with a male: female ratio of 1,6: 1 lymphoma (111,35%) leukemia (83,26%) and wilm's tumor (43,13%) were the three most common groups of tumors. Thirty percent of all lymphomas was Burkitt's lymphoma. 3,4% of all childhood cancer cases were nasopharyngeal carcinomas (Abuidris.D 2006).

Justification and Rationale: Pediatric Leukemic patients need specific care because they are risk for infections and they has bleeding tendency and the treatment has difficult side effects. There is lack of studies of Oncology specially in oncology nursing as well as, Leukemic patients haven't received enough nursing management in cancer centers in Sudan.

Objectives

General objective: To assess oncology pediatric nurses knowledge and practices about acute lymphoblastic leukemia at National Cancer Institute during the period of the study (From April to October 2010).

Specific objective

To assess the level of nurses knowledge regarding acute lymphoblastic leukemia (eg. risk factors, causes, signs and symptoms, classification, treatment, prognosis and nursing management) during the period of the study.

To identify the nursing clinical performance about acute lymphocytic leukemic children during the period of the study.

Material and Methods

Study design

This descriptive hospital based study aimed at assessing the oncology pediatric nurses knowledge and practices regarding acute lymphoblastic leukemia at the National Cancer Institute-Wad Medani during the period from (April to October 2019).

Study area

Thestudy was carried out at National Cancer Institute-Wad Medani, the first oncological center of cancer treatment in Gezira state. It consist four departments as follows:

Department of Oncology that include five units:

(Radiotherapy unit, Pediatric unit, statistic unit, pharmacy unit and medical physic unit)
Department of Nuclear Medicine.
Department of Molecular biology.
Department of diagnosis.

The pediatric unit is the first unit of pediatric oncology in Sudan (established in 2007), it include two oncological pediatrician and four medical officer and ten registered nurses and separated ward contain 10 beds and isolation rooms contain two rooms and two beds.

Study Population: Pediatric registered oncology nurses were enrolled is this study.

Sample size: All nurses available and worked at oncology pediatric ward during the period of the study were selected.

Inclusion criteria:

All registered nurses working in pediatric ward during the period of the study from (April to October 2019).

Exclusion criteria: Under training nurses was excluded from this study.

Sample technique

Permission was taken from the manager of oncology department at National Cancer Institute

Explanation of all nurses warked in pediatric ward about the study and the questionnaire data collection

Each nurse has asked to complete this questionnaire within 30 minutes by guidance of the researcher.

The researcher observed each nurse during the work time about their clinical performance and the skills done to the patient through designed observation check list.

Data collection tools: Two tools were used to collect the data

Interview questionnaire was used to assess pediatric nurses knowledge about aspects of ALL such as: (definition, causes, sign and symptom, risk factors, prognosis and nursing management).

Observation check list was used to identify nurses skills and performance during management of ALL children.

Data analysis: For the purpose of this study the data were coded, processed and transferred to computer coding. The descriptive analysis was adapted which includes percentage, frequency distribution, and table and figures software program. Statistical Package for Social Science (SPSS) was applied to determine the relationship between the dependent variable and independent variable.

Results and Discussion

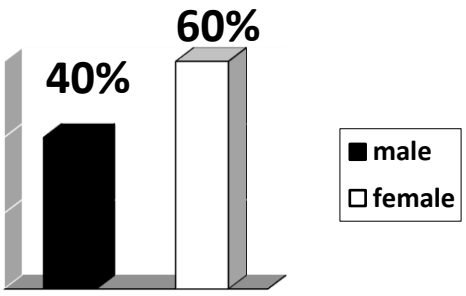
Results: - Demographic date of pediatric Nurses:

Table (1): Distribution of nurses according to age groups :

Age group	Frequency (No)	Percent (%)
20-30 years	25	71.4
31-40 years	5	14.3
41 and above	5	14.3
Total	**35**	**100**

The table showed that: Majority of nurses aged between 20 - 30 years (71.4%).

Figure (1) Distribution of nurses according to gender

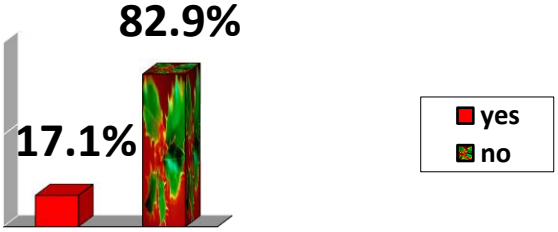


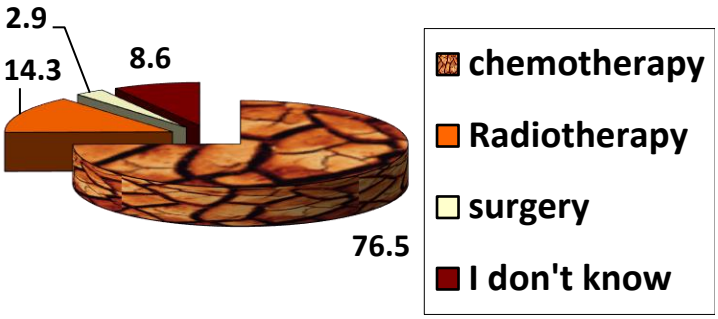
The result revealed most of the nurses are femal (60%) while male nurse were only (40%).

Table (2): Distribution of nurses according to educational level:

Educational level	Frequency (No)	Percent (%)
Technical secondary	6	17.1
Diploma	9	25.7
Bachelor	20	57.1
Total	**35**	**100**

Most of nurses hold a bachelor (57%) while (25.7%) have diploma and (17.1%) have secondary.





Discussion: Acute lympholoblastic leukemia is proliferation of lymphoid cells blocked at early stage of differentiation and accounts for three quarters of all cases of childhood leukemia. Supportive care of the leukemia patient is a major contributor to increased survival and improved quality of life (Rizzaric 2004).

This study aimed at assessing oncology pediatric nurses knowledge and practices about acute lymphoblast leukemia in children at National Cancer Institute in Wad Medani, Their knowledge assessed through interview questionnaire and their practices monitoring through observation check list.

In present study the majority of nurses (71.4%) their age range between 20 – 30 years (Table 1). This revealed the majority of them are young and they has little experience in this field (Table 3) in caring of ALL. in which majority of them (65.7%) their experience between 1 – 5 years this reflect the inefficient standard of care in management of ALL patient .

Also in this study the results showed more half of nurses (57.1%) had bachelor in nursing (Table 2) while (25.7%) had diploma and (17.1%) had technical secondary certificate, this referee to the feature policy of NCI to improve the nursing performance.

The study showed that the majority of nurses (82.9%) hadn't attended training course of educational program about ALL (Figure 2).

In this study (68.6%) of nurses showed the ALL was a disorders of WBCs and bone marrow (Table 4) this similar to study done by (Jemson et al 2005) who defined ALL is cancer of blood and bone marrow characterized by proliferation of blood cell . *Alcoser et al 2003*. Showed that the nurse relying on strong knowledge of the disease and potential complications and must uses systemic assessments to monitor physiologic homeostasis. Also *Johnson BL2007* demonstrated the nursing support required in three areas : to prevent or correct expected side effects of the disease and treatment to anticipate and treat unexpected or potential complications and to facilitate psychosocial adaptation of the patient and family . Also other study revealed that the nurse caring for the patient with leukemia must have a thorough knowledge of the medical and nursing management and treatment and potential disease complication to provide effective nursing care. (*Gale R P 2006*).

This study that (85.6%) of nurses between 2 – 5 years has peak incidence of affection with ALL (Table 5) this resembled to study done by (Rizzari et al 2004) who showed the peak incidence of ALL between age 2 – 5 years also other study done on 670 ALL children showed that 370 were male and 300 were female there was 19 infant and 504 patients aged between 1 – 9 years and 47 patient aged was 10 year or older (steizferz 2006) .

In this study the results showed that (40%) of nurses believed exposure to radiation predispose factor for ALL while (34.3%) showed genetic factors' (14.3%) showed exposure to chemical and (11.4%) related to the viruses (Table 6) . This similar to study done by (Rizzari et al 2004) showed the ionizing radiation can play a role in the development of a cute leukemia. However the cases of leukemia attributable to radiation are rather a few also they showed the role to toxic chemical exposure (e.g ., benzene) in the development of childhood ALL is questionable *Chim Hon et al 2007* . Other factor that could be involved in the development of ALL include parental cigarette smoking maternal use of alcohol, contraceptives *Tartaglia et al 2004* the role played by viral infection in pathogenesis of human leukemia has been investigated intensively (*Lon ML et al 2005*).

Some people have a genetic predisposition to wards developing leukemia. Also people with chromosomal abnormalities or certain other genetic conditions have a greater risk of leukemia for example, people with Down syndrome (*Wiernik, Peter H 2001*).

In the present study (28.6%) of nurses showed that there was main cause for ALL (Table 7) like exposure to chemical substance, radiation and genetic factor this contradicting with other study done by Smith *et al 2006 showed* the cause for most ALL is unknown. In general cancer is caused by damage to DNA that leads to uncontrolled growth and spread through the body.

The results showed that (76.5%) of nurses obtained that the chemotherapy was initial treatment of ALL (Figure 3) this was similar to study done by *Hoff brond et al 2006* who showed chemotherapy is the initial treatment of choice , most ALL patient will received a combination of deferent treatment. There were no surgical options due to the body wide distribution of malignant cells.

In this present study (57%) of nurses showed BMT was the best option in relapse while (22.9%) showed other protocol of chemotherapy (Table 8) this similar to study showed that most ALL relapses occur within the first 2 years of remission. As many as half of relapses patients may achieved a second remission by repeating their original induction regimen; however, BMT is only cure. (*finie wiez KJ 2002*).

Patient who relapsed after completing maintenance therapy have a better chance of attaining second remission than those patients who relapse while therapy *Levit L 2005*. Bone marrow transplantation may allow long term survival for as many as 18% to 45% those in second CR (*Larson RA 2007*).

Also in present study more than half of nurses said no time for patient teaching (57.1%) and (11.4%)had not enough information about disease while (25.7%) were had psychological stress because poor prognosis (Table 9) this contradicting with study done by *laport GF 2007* who said the nurse must be teach and orient the patient and his family about the plan of care .

In this study the results showed (75.7%) of nurses monitored the vital signs for neutropenic ALL patient correctly (Table 10) this is resembled with study done by *Shirley E. 2001* who showed in nursing care of neutropenic ALL patient monitor temperature and vital signs every 4 hours and assess for changes in blood pressure, urine out put and mental status that early signs of septic shock.

Finally this study revealed all of nurses (100%) doesn't hand washing (Table 11) this similar to study showed that in pediatric teaching hospital showed that all most of pediatric nurses do their work without hand washing and no one does hand wash following the standard step . (*Amira Elssir 2010*).

Conclusion: The study conducted that the nurses knowledge about ALL were adequate while their clinical performance were relatively inadequate and incorrect in many skills.

Recommendations

- Continuous training program should be conducted for all nurses in pediatric unit.
- Establish an infection control unit in the hospital.
- Employment more experience nurses form bachelor handling and post graduate to improve nursing performance.
- Continuous supervision of nurses' performance for good standard care .

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