Assessment of Chemotherapy Safe Handling among Mothers of Children with Cancer at Home

Thesis

Submitted for Partial Fulfillment for Requirements of
Master Degree in Pediatric Nursing

By

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Mona Abdel Aziz Monier

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Abbreviations	Full term
All	Acute lymphoblastic leukemia
All Infantile	Acute lymphoblastic leukemia infantile (beyond 1 year)
ALL (ph+ve)	Acute lymphoblastic leukemia (philidiphia positive)
AML (M3)	Acute myeloid leukemia (M3)
ACC	Adrenal Cortical Carcinoma
BT	Brain Tumor
CML	Chronic myeloid leukemia
CCHE	Children Cancer Hospital Egypt
CBC	Complete Blood Count
CRT	Conformal Radiation Therapy
CVADs	Central venous access devices
FDA	Food and Drug Administration
IMRT	Intensity Modulated Radiation Therapy
MTX (IM)	Methotrexate via intramuscular
NCI	National Cancer Institute
NIOSH	National Institute for Occupational Safety and Health
RBCs	Red Blood Cells
STCs	Skin-tunnelled catheters
TKI	Tyrosine kinase inhibitors include (Imatinib, Dastanib, Nilotinib)
SIOP	Société Internationale d'Oncologie Pédiatrique
RT	Radio Therapy
WBCs	White Blood Cells

Abstract

Background: Being hazardous, chemotherapy has genotoxicity, carcinogenicity, teratogenicity, organs toxicity, and infertility related exposure harms. Mothers who handle chemotherapy at home may experience such effects due to improper transportation, storage, spillage management, waste disposal and their children's excreta handling. **Aim**: This study aimed to assess chemotherapy safe handling among mothers of children with cancer at home. **Design**, descriptive. This study was conducted at the outpatient and inpatient of pediatric oncology departments in Children Cancer Hospital (57357). **Sample**: 200 mothers were selected. They administer and handle chemotherapy at home. **Tools** of data collection included a structured interviewing questionnaire and self-reported checklist sheets for assessing mothers' knowledge and reported practices. **Results**: revealed that, 30% of mothers had satisfactory level knowledge, 96.5% of them had poor level of practice. **Conclusion**: The most of the studied mothers had school education, aged from thirty to less than forty years, were living in urban, had un satisfactory total level of knowledge and poor practice level accompanied by lack of awareness regarding safe handling of chemotherapy. There was a very highly statistically significant correlation between mothers' awareness and each of their total knowledge, reported practices. Meanwhile, there was a statistically significant relation between the studied mothers' level of education and their total knowledge, also between their age and their total practices. **Recommendation:** Establish a system of return –back extra -chemotherapy and related -waste to the hospital pharmacy by mothers of children with cancer should be one of the future.

Key words: Chemotherapy, Cancer, Children, handling, Home, Mothers.

Introduction

Cancer increases globally and remains the leading cause of death worldwide. It has a large impact on both children and caregivers' lives, often resulting in increased levels of tension, pressure, and psychological diseases, and a decline of personal welfare and well-being **(Kim & Spillers, 2010).** In children, cancer is the second leading cause of death; approximately 300,000 cases of cancer are diagnosed in children and teens under the age of 19 every year worldwide. Moreover; there are an estimated 80,000 deaths annually from childhood cancer, nearly half of childhood cancers are leukemia and lymphoma, but leukemia is the most common form of childhood cancer **(American Cancer Society, 2016)**.

Chemotherapy remains as a standard treatment for cancer besides radiotherapy and surgery; owing to the advances in chemotherapy treatment modalities, it can be administered at home **(Evans et al., 2015).** Chemotherapy is hazardous; whether in intravenous or oral forms. In oral chemotherapy, some of the traditional responsibilities of health care providers have been shifted to children's mothers. So, it is clear that administering chemotherapy without direct supervision from oncology nurse or other

health care providers has a potential safety risks **(Zerillo & Walsh, (2017).**

In several published studies had approved that exposures to hazardous drugs can cause both acute and chronic health effects such as skin rashes, adverse reproductive outcomes including infertility, spontaneous abortions, and congenital malformations, and possibly leukemia and other cancers. The health risk depends on how much exposure a mother has to these drugs and how toxic they are **(National Institute for Occupational Safety and Health [NIOSH], 2018).**

Mothers are the most common caregiver who stays during hospitalization with their children with cancer. Concerning with the care of their sick children, the mothers may be directly or indirectly exposed to the hazards related to oral chemotherapy, which are administered continuously for many months and even years from the children's excreta which is contaminated with chemotherapy or its active metabolites. These hazardous may be represented in carcinogenicity, mutagenicity, and embryo-fetal toxicities. Additionally, mothers may be indirectly exposed to chemotherapy during administration or handling through inhalation, ingestion, or absorption **(Cass et al., 2016).**

Significance of the problem:-

Recently, according to the data base for scientific research in the study setting, Children Cancer Hospital Egypt CCHE (57357), a total of 4,366 children having cancer were enrolled from 2016 till the end of 2017 and 3401 of them receives chemotherapy at home orally and intramuscularly **(CCHE, 2018).**Therefore; it is important to assess chemotherapy safe handling among mothers of children with cancer at home.

Aim of Study

The aim of this study is to assess chemotherapy safe handling among mothers of children with cancer at their home through:-

- Assessing mothers' knowledge regarding to safe handling of chemotherapy.
- Assessing mothers' reported practices regarding to safe handling of chemotherapy.

Research questions:

1- What are the mothers' knowledge and reported practices regarding to the safe handling of chemotherapy for their children with cancer?

2- Is there a relation between the mothers' characteristics, and their knowledge and reported practices regarding to safe handling of chemotherapy for their children with cancer?

Review of Literature

Part I: Overview about Cancer in Pediatrics

Cancer is a term used for diseases in which abnormal cells divide without control and can spread to the other parts of the body through the circulatory and lymphatic systems **(Severson, 2013).** It activates when cells in a part of the body start to grow out of the controller **(Smith et al., 2012).**

According to research department at Children's Cancer Hospital Egypt 57357, regarding pediatric cancer, an overall 7215 cases (4187 males and 3028 females) children with cancer were recorded from 2009 till the end of 2013 **(Children's Cancer Hospital in Egypt [CCHE], 2013).**

It was estimated that 175, 000 cases of cancer are diagnosed annually worldwide, in children aged less than 15 years, and fewer than 40% of them (mostly those in high-income countries)**.** The American Cancer Society guidelines endorse, child's possibility of surviving cancer is reduced in the developing countries. Many childhood cancers are highly treatable if diagnosed at an early phase,

and some treatment regimens are quite simple, low-cost, and well standard **(Fedewa et al., 2015).**

The International Agency for Research on Cancer, illustrated about 57% of the cancer cases globally occur in low and middle-income countries. The prevalence of pediatric oncology is higher in industrialized countries than in developing countries, but patterns fluctuate by cancer type racial and ethnic differences in survival for childhood and adolescent, cancer incidence and mortality worldwide **(Ferlay et al., 2015).**

Etiology and risk factors of cancer in pediatrics:

Genetic predisposition may either be inherited or the result of a genetic mutation that occurs during the presence of the fetus in the uterus. Sometimes a person is born with one of these mutations already present, this does not mean that they will definitely get cancer, but it makes it more likely. This "genetic predisposition" mostly involves the part of DNA inherited from the parents. While some genetic factors increase the risk of childhood cancer. For instance, children born with a genetic predisposition to leukemia are known to acquire the predisposing genetic mutation to the disease whilst they are in the womb **(Deoraj and Roy, 2012).**