

# A STUDY TO ASSESS THE EFFECTIVENESS OF CLINICAL TRAINING PROGRAM ON CYTOTOXIC SPILL MANAGEMENT DURING CHEMOTHERAPY DRUG PREPARATION AMONG STAFF NURSES WORKING AT SMVMCH, PUDUCHERRY”

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## ABSTRACT:

The severity of hazards for the health care workers responsible for the handling of cytotoxic waste is mainly attributed to its toxicity and the extended duration of exposure. Exposure to cytotoxic substances in HCFs occurs during the preparation of, or treatment with drugs or these drugs occurring through inhalation of dust or aerosols, absorption through the skin, ingestion of food contaminated with cytotoxic drugs. The aim of the study to assess the Effectiveness of Clinical Training program on cytotoxic spill management during Chemotherapy drug preparation among Staff nurses at SMVMCH, Puducherry. Pre experimental one group pre -test & post -test research design study was conducted among 30 Staff Nurses in Sri Manakula Vinayagar Medical College and Hospital at Puducherry. The nature and purpose of the study was explained to Staff Nurses and written consent was obtained from study. Each Staff Nurses were selected through purposive sampling method and was assessed the first day of the level of knowledge and skills regarding cytotoxic spill management during chemotherapy drug preparation by using multi choice questions & Check List and intervention of Clinical Training Programme. On the seventh day again the level of Knowledge and Skill of Staff Nurses will be assessed by using same multi choice questions and Check List. The study had proved that effective and had brought excellent changes and improvement in level of knowledge and skill regarding Cytotoxic spill management during Chemotherapy drug preparation among Staff nurses.

**KEY WORDS:** Cytotoxic spill management, clinical training program, chemotherapy, staff nurses.

## INTRODUCTION

Chemotherapy is a kind of treatment that uses drugs to attack cancer cells. Safe handling of chemotherapeutic agents during administration and disposal is critical. Most antineoplastic agents are toxic compounds that are carcinogenic, mutagenic, or teratogenic. Direct contact may cause irritation of the skin, eyes, and mucous membranes. Preoperative personnel should know how to handle hazardous materials safely to protect the patient, other staff members, and themselves. These safety precautions include appropriately identifying the patient; correctly preparing, verifying, and documenting the chemotherapeutic agents being administered; consistently wearing personal protective equipment; transporting the chemotherapeutic agent in a puncture-resistant container labelled “chemotherapy”; properly disposing of the chemotherapeutic agent and supplies; and handling a spill if one occurs. Educational programmes about cancer and safe handling of cancer chemotherapeutic drugs provide the nurses to safeguard themselves as well as patients.

## STATEMENT OF THE PROBLEM

“A study to Assess the Effectiveness of Clinical Training program on Cytotoxic spill management during Chemotherapy drug preparation among Staff nurses working at SMVMCH, Puducherry”

## OBJECTIVES

1. To assess the level of knowledge and skill regarding cytotoxic spill management among staff nurses working at SMVMCH.
2. To evaluate the effectiveness on clinical training program regarding cytotoxic spill management among staff nurses working at SMVMCH.
3. To associate the level of knowledge and skill regarding cytotoxic spill management with their selected demographic variables among staff nurses working at SMVMCH.
4. To correlate the knowledge and skill before and after the clinical training program on cytotoxic spill management among staff nurses working at SMVMCH

## OPERATIONAL DEFINITION

**ASSESS:** It refers to measure the level of Knowledge and Skill of nurses acquired by Clinical Training Program on cytotoxic spill management by using valid questioner and observation by the investigator.

**EFFECTIVENESS:** It refers to determining the extent to which Clinical Training Program has brought the intended improvement which is measured in terms of gain in Knowledge and Skill towards practicing safety measures to prevent cytotoxic spill during chemotherapy drug preparation among Nurses.

**CYTOTOXIC:** an agent or process that is toxic to cells.

**CYTOTOXIC SPILL:** Spillage is one of the potential complications that may occur during the administration of cytotoxic chemotherapy.

**CHEMOTHERAPY:** - The use of any chemical agents to treat or control disease. Most often used to describe treatment of malignant and other diseases with cytotoxic agent

**PRECAUTIONS:** In this study it refers to standard way of practice based on the Standard Guidelines given by Health Organizations in order to prevent cytotoxic spill management during chemotherapy administration

**CLINICAL TRAINING PROGRAMME:** It refers to provides real world experience by allowing the staff nurses to prepare the chemotherapy drug by demonstrating the management and precautions cytotoxic spillage which includes Causes, Risk groups, Complications and Safety measures of cytotoxic spillage.

**STAFF NURSES:** It refers to who are all working in chemotherapy department in SMVMCH.

## HYPOTHEESIS:

**H1:** There will be significant difference between the level of knowledge & skill among staff nurses before and after the Clinical Training Program.

**H2:** There will be significant correlation between knowledge and skill regarding cytotoxic spill management and its precautions among staff nurses.

**H3:** There will be significant association in levels of knowledge & skill regarding cytotoxic spill management and its precautions among staff nurses with their selected demographic variables.

## RESEARCH APPROACH:

Quantitative research approach will be adopted for this study.

**RESEARCH DESIGN:**

Pre experimental one group pre test-post test design will be adopted for this study.

**SETTING OF THE STUDY**

The study will be conducted at Sri Manakula Vinayagar Medical College and Hospital with 30 staff nurses at Puducherry

**POPULATION**

The population refers to all the staff nurses working in chemotherapy department

**SAMPLE:**

Its comprises of staff nurses working at Sri Manakula Vinayagar Medical College and Hospital. Who fulfills the inclusion criteria.

**SAMPLE SIZE:**

The sample size consists of 40.

**SAMPLING TECHNIQUE:**

Purposive sampling technique adopted for this study

**VARIABLES OF THE STUDY:**

**DEPENDENT VARIABLE:** Level of knowledge and skill regarding cytotoxic spill management and its precautions among staff nurses.

**INDEPENDENT VARIABLE:** Clinical Training Program on cytotoxic spill management.

**CRITERIA FOR SAMPLE SELECTION:****Inclusion criteria:**

Both male and female staff nurses working in chemotherapy department

Staff nurses available at the time of data collection.

**Exclusion criteria:**

OPD staff nurses.

**Description of Data Collection Instruments:**

**Section A:** This section consists of socio-demographic variables that have no scoring.

**Section B:** Self-administered closed ended questions on assessing knowledge regarding cytotoxic drugs and its precaution. It consists of 25 questionnaires and each question's correct answer carries 1 mark and totally 35 marks.

LEVEL OF KNOWLEDGE	SCORE
Adequate knowledge	17 -25
Moderate knowledge	9-16
Inadequate knowledge	0-8

Section C: Check list consists of 15 items to assess the level of skills on preventive and safety measures of cytotoxic drugs spillage management. Each correct activity carries 1 mark and totally 15 marks.

LEVEL OF SKILLS	SCORE
High competent	8-15
Low competent	0-7

**DATA COLLECTION PROCEDURE:**

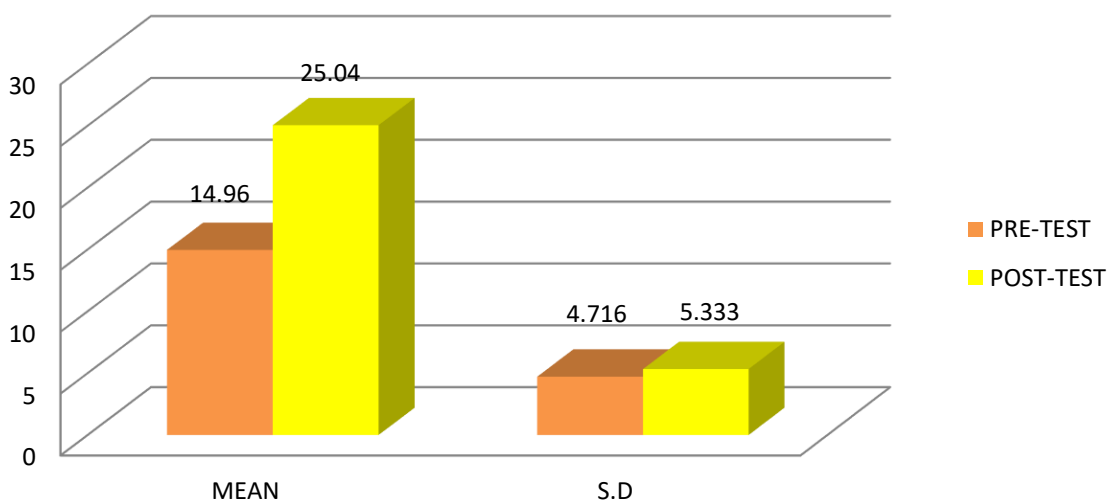
Formal permission is obtained from the institutional authority. Samples was selected based on the inclusion criteria through purposive sampling techniques. Explained regarding the study and its benefits to the samples (staff nurses). On the first day, the level of knowledge and skill of nursing staff was assessed by using multi-choice questions and check list. On the same day, Clinical Training Programme was conducted to the staff nurses regarding Cytotoxic spill management during Chemotherapy drug preparation. On the seventh day again, the level of knowledge and skill of nursing staff was assessed by using same multi-choice questions and check List used on the first day.

**RESULT AND DISCUSSION**

**Table 4: Comparison of the Pre-test and post- test of the level of knowledge regarding Cytotoxic spill management during Chemotherapy drug preparation among staff nurses. (N=30)**

LEVEL OF KNOWLEDGE	Mean	Standard Deviation	't' Value	'p' Value
Pre-test	14.96	4.716	-89.04	0.001**
Post-test	25.04	5.333		

**\*\**-p < 0.001 highly significant***



**Figure 6: Mean and standard deviation Pre-test and post- test of the level of knowledge regarding Cytotoxic spill management during Chemotherapy drug preparation among staff nurse**

**The first objective of the study to assess the level of knowledge and skill regarding cytotoxic spill management during Chemotherapy drug preparation among Staff nurses at SMVMCH.**

. In pre-test, Majority of the staff nurses 12 (40%) had moderate level of knowledge and 18 (60%) had inadequate level of knowledge. The mean and SD of the level of knowledge regarding Cytotoxic spill management during Chemotherapy drug preparation among staff nurses in pre-test is  $(14.9 \pm 4.716)$ . In post-test, Majority of the staff nurses 10 (33.3%) had moderate level of knowledge and 20 (66.6%) had adequate level of knowledge. The mean and SD of the level of knowledge regarding Cytotoxic spill management during Chemotherapy drug preparation among staff nurses in post-test is  $(25.0 \pm 5.333)$ .

This study shows frequency and percentage wise distribution of pre-test and post- test of the level of skill regarding cytotoxic spill management during Chemotherapy drug preparation among staff nurses. In pre-test, Majority of the staff nurses 22 (73.3%) had low competent level of skill and 8 (26.6%) had high competent level of skill. The mean and SD of the level of skill regarding Cytotoxic spill management during Chemotherapy drug preparation among staff nurses in pre-test is  $(6.73 \pm 2.044)$ .

In post-test, Majority of the staff nurses 8 (20%) had low competent level of skill and 24 (80%) had high competent level of skill. The mean and SD of the level of skill regarding Cytotoxic spill management during Chemotherapy drug preparation among staff nurses in post-test is  $(12.0 \pm 1.766)$ .

**The second objective of the study to evaluate the effectiveness of Hands on Clinical Training Program regarding cytotoxic spill management during Chemotherapy drug preparation among Staff nurses at SMVMCH.**

The mean score of effectiveness in the pre-test was  $14.96 \pm 4.716$  and the mean score in the post- test was  $25.04 \pm 5.333$  respectively. The calculated paired 't' test value of  $t = -89.04$  shows statistically highly significant difference between Comparison of the Pre-test and post- test level of knowledge regarding Cytotoxic spill management during Chemotherapy drug preparation among Staff nurses respectively. The mean score of effectiveness in the pre-test was  $6.737 \pm 2.044$  and the mean score in the post- test was  $12.02 \pm 1.766$  respectively. The calculated paired 't' test value of  $t = -28.34$  shows statistically highly significant difference between Comparison of the Pre-test and post- test level of skill regarding Cytotoxic spill management during Chemotherapy drug preparation among Staff nurses respectively.

**The third objective of the study to correlate the knowledge and skill before and after the Hands on Clinical Training Program on Cytotoxic spill management during Chemotherapy drug preparation**

Correlation of level of knowledge and skill in Pre-test regarding Cytotoxic spill management during Chemotherapy drug preparation among staff nurses. In mean and SD of level of knowledge and skill in Pre-test regarding Cytotoxic spill management during Chemotherapy drug preparation among staff nurses is  $14.96 \pm 4.716$  and  $6.737 \pm 2.044$ , Correlation of level of knowledge and skill in Pre-test regarding Cytotoxic spill management during Chemotherapy drug preparation indicates the negative correlation and shows the results r- value is  $(-0.405)$  p-value is  $(p=0.001)$  are highly significant.

Correlation of level of knowledge and skill in Post-test regarding Cytotoxic spill management during Chemotherapy drug preparation among staff nurses. In mean and standard deviation of level of knowledge and skill in Post-test regarding Cytotoxic spill management during Chemotherapy drug preparation among staff nurses is  $25.04 \pm 5.333$  and  $12.02 \pm 1.766$ , Correlation of level of knowledge and skill in Post-test regarding Cytotoxic spill management during Chemotherapy drug preparation indicates the positive correlation and shows the results r- value is

**The fourth objective of the study to associate the level of knowledge and skill regarding cytotoxic spill management with their selected demographic variables among staff nurses at SMVMCH.**

The demographic variable age in years, gender, year of experience had shown statistically significant at  $p < 0.001$  level. The other demographic variables had not shown statistically significant association with Pre-test of the level of knowledge .In post test demographic variable gender of course had shown statistically significant association at  $p < 0.05$  level

The demographic variable age in years and gender had shown statistically significant association pre- test of the level of skill at  $p < 0.001$  level. In the demographic variable type of course, years of experience had shown

statistically significant association pre-test of the level of skill at  $p < 0.05$  level. In post test the demographic variable age in years had shown statistically significant association post- test at  $p < 0.001$  level.

This study was conducted to assess the Effectiveness of Clinical Training program on cytotoxic spill management during Chemotherapy drug preparation among Staff nurses at SMVMCH, Puducherry. Pre experimental one group pre -test & post -test research design study was conducted among 30 Staff Nurses in Sri Manakula Vinayagar Medical College and Hospital at Puducherry. The nature and purpose of the study was explained to Staff Nurses and written consent was obtained from study. Each Staff Nurses were selected through purposive sampling method and was assessed the first day of the level of knowledge and skills regarding cytotoxic spill management during chemotherapy drug preparation by using multi choice questions & Check List and intervention of Clinical Training Programme. On the seventh day again the level of Knowledge and Skill of Staff Nurses will be assessed by using same multi choice questions and Check List. The study had proved that effective and had brought excellent changes and improvement in level of knowledge and skill regarding cytotoxic spill management during Chemotherapy drug preparation among Staff nurses.

## CONCLUSION:

A study to Assess the Effectiveness of Clinical Training program on Cytotoxic spill management during Chemotherapy drug preparation among Staff nurses at SMVMCH, Puducherry” The findings of the study revealed that out of 30 Staff Nurses, the level of knowledge and skills regarding Cytotoxic spill management during Chemotherapy drug preparation. In post-test, Majority of the staff nurses 10 (33.3%) had moderate level of knowledge and 20 (66.6%) had adequate level of knowledge And In post-test, Majority of the staff nurses 8 (20%) had low competent level of skill and 24 (80%) had high competent level of skill. The Intervention in Clinical Training Programme, the researcher in order to improve the level of knowledge and skills regarding cytotoxic spill management during Chemotherapy drug preparation among Staff nurses.

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