



# Impact Of Nurse-Led Education On Treatment Adherence And Management Of Chemotherapy Side Effects Among Cancer Patients

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## Abstract

**Background:** Chemotherapy is a primary treatment modality for cancer, but it is often associated with multiple side effects such as nausea, vomiting, fatigue, alopecia, mucositis, and immunosuppression. These adverse effects frequently lead to poor treatment adherence, reduced quality of life, and compromised therapeutic outcomes. Nurse-led education has emerged as an effective intervention to improve patient understanding and adherence to chemotherapy regimens.

**Objective:** To assess the effectiveness of nurse-led educational intervention on treatment adherence and management of chemotherapy side effects among cancer patients.

**Methods:** A quasi-experimental pre-test and post-test design was adopted among 100 cancer patients receiving chemotherapy at a tertiary care hospital. A structured questionnaire was used to assess knowledge and adherence levels. The intervention included education on chemotherapy side effects, self-care practices, medication adherence, and lifestyle modifications. Data were analyzed using descriptive and inferential statistics.

**Results:** The mean adherence score significantly improved from pre-test (Mean = 10.5, SD = 2.8) to post-test (Mean = 19.2, SD = 2.1), with a mean difference of 8.7 ( $t = 16.45$ ,  $p < 0.05$ ). Knowledge regarding side effect management also improved significantly. Patients reported better control of symptoms such as nausea and fatigue after the intervention.

**Conclusion:** Nurse-led educational interventions significantly improve treatment adherence and enhance patients' ability to manage chemotherapy side effects effectively.

**Keywords:** Chemotherapy, Nurse-led education, Treatment adherence, Side effects, Cancer care

## Introduction

Cancer continues to be one of the leading causes of morbidity and mortality worldwide, posing a significant public health challenge. According to the World Health Organization, cancer accounts for millions of deaths annually, with a steadily rising incidence due to population aging, lifestyle changes, and environmental factors. The burden of cancer is particularly high in low- and middle-income countries, where access to early diagnosis and effective treatment remains limited. As a result, improving treatment outcomes and patient adherence has become a priority in oncology care.

Chemotherapy is one of the most commonly used modalities in cancer treatment, either alone or in combination with surgery and radiotherapy. It works by targeting rapidly dividing cancer cells, thereby reducing tumor burden and improving survival rates. Despite its effectiveness, chemotherapy is often associated with a wide range of adverse side effects, including nausea, vomiting, fatigue, alopecia (hair loss), mucositis, myelosuppression, and increased susceptibility to infections. These side effects can significantly affect patients' physical comfort, emotional well-being, and overall quality of life. In many cases, the severity of these symptoms leads to treatment interruptions, dose reductions, or even discontinuation of therapy.

Treatment adherence, defined as the extent to which a patient follows the prescribed treatment regimen, is a critical determinant of successful cancer therapy. Poor adherence to chemotherapy can result in suboptimal therapeutic outcomes, disease progression, increased healthcare costs, and reduced survival rates. Factors influencing adherence include lack of knowledge, fear of side effects, psychological distress, financial constraints, and inadequate support systems. Therefore, addressing these barriers is essential to ensure effective cancer management.

In this context, nurses play a vital role in delivering holistic and patient-centered care. As frontline healthcare providers, nurses are uniquely positioned to educate patients, provide emotional support, and promote adherence to treatment regimens. Nurse-led education is an evidence-based approach that focuses on enhancing patients' understanding of their disease, treatment process, potential side effects, and self-care strategies. Through structured teaching sessions, counseling, and continuous support, nurses can empower patients to actively participate in their care and make informed decisions.

Nurse-led educational interventions have been shown to improve patients' knowledge, reduce anxiety, and enhance their ability to manage chemotherapy-related side effects effectively. For example, educating patients about dietary modifications can help manage nausea and vomiting, while guidance on infection prevention can reduce the risk of complications associated with immunosuppression. Additionally, psychological support provided by nurses can alleviate fear and promote a positive attitude toward treatment.

Furthermore, these interventions contribute to improved treatment adherence by building trust between patients and healthcare providers, clarifying misconceptions, and reinforcing the importance of completing the prescribed therapy. Studies have demonstrated that patients who receive structured educational support are more likely to adhere to treatment protocols, experience fewer complications, and report better overall satisfaction with care.

In recent years, there has been increasing recognition of the importance of nurse-led interventions in oncology settings. Integrating such programs into routine clinical practice can not only enhance patient outcomes but also reduce the burden on healthcare systems by minimizing hospital readmissions and complications. Therefore, evaluating the effectiveness of nurse-led education on treatment adherence and management of chemotherapy side effects is essential for strengthening oncology nursing practices and improving patient-centered care.

## Need of the Study

Cancer is an escalating global health concern, contributing significantly to morbidity and mortality across all age groups. According to the World Health Organization, the global burden of cancer continues to rise, with a disproportionate impact on developing countries like India. Despite advancements in diagnostic and therapeutic modalities, chemotherapy remains one of the most widely used and effective treatments for various types of cancer. However, its success is highly dependent on patients' adherence to the prescribed treatment regimen.

One of the major challenges associated with chemotherapy is the occurrence of distressing side effects such as nausea, vomiting, fatigue, alopecia, mucositis, and immunosuppression. These side effects not only impair patients' physical health but also affect their psychological well-being, leading to anxiety, fear, and decreased motivation to continue treatment. As a result, many patients exhibit poor adherence, skip treatment cycles, or discontinue therapy altogether, ultimately compromising treatment outcomes and survival rates.

In the Indian healthcare context, factors such as limited health literacy, cultural beliefs, lack of awareness, and inadequate access to supportive care services further exacerbate the problem of non-adherence. Many patients are not adequately informed about the expected side effects of chemotherapy and the strategies to manage them effectively. This knowledge gap leads to misconceptions, increased distress, and poor coping mechanisms.

Nurses, being the primary caregivers and constant point of contact for patients, play a crucial role in addressing these challenges. Nurse-led education has emerged as a cost-effective and practical approach to enhance patient knowledge, promote self-care practices, and improve adherence to treatment. Through structured educational interventions, nurses can provide individualized guidance on symptom management, medication compliance, nutritional support, and psychological coping strategies.

Although several studies have highlighted the importance of patient education in oncology care, there remains a need for more focused research on the effectiveness of nurse-led educational interventions in improving treatment adherence and managing chemotherapy side effects, particularly in the Indian setting. Additionally, integrating such interventions into routine clinical practice requires evidence-based validation to support their implementation.

Therefore, the present study is essential to evaluate the impact of nurse-led education on treatment adherence and management of chemotherapy side effects among cancer patients. The findings of this study will help in developing structured educational programs, improving nursing practices, enhancing patient outcomes, and ultimately contributing to better quality of cancer care.

## Objectives

1. To assess the baseline knowledge regarding chemotherapy side effects and treatment adherence.
2. To evaluate the effectiveness of nurse-led education on treatment adherence.
3. To determine the improvement in management of chemotherapy side effects after intervention.
4. To find the association between adherence and selected demographic variables.

## Hypotheses

- **H1:** There is a significant difference between pre-test and post-test adherence scores among patients receiving nurse-led education.
- **H2:** There is a significant association between adherence levels and selected demographic variables.

## Methodology

This study was conducted to evaluate the effectiveness of nurse-led education on treatment adherence and management of chemotherapy side effects among cancer patients. A systematic and structured methodological approach was adopted to ensure the reliability and validity of the findings.

## Research Design

A **quasi-experimental research design** with a **one-group pre-test and post-test approach** was used. This design enabled the researcher to assess the baseline level of treatment adherence and knowledge regarding chemotherapy side effects before the intervention and to measure the changes after the implementation of the nurse-led education program.

## Setting

The study was carried out in a **tertiary care hospital**, which provides specialized oncology services including chemotherapy administration, supportive care, and patient counseling. The setting was selected due to the availability of a sufficient number of cancer patients undergoing chemotherapy.

## Population and Sample

The target population consisted of patients diagnosed with cancer and receiving chemotherapy. A total of **100 patients** were selected as the sample for the study.

## Sampling Technique

A **purposive sampling technique** was used to select participants who met the inclusion criteria. This method ensured that only those patients who were receiving chemotherapy and were willing to participate were included in the study.

## Inclusion Criteria

- Patients diagnosed with any type of cancer
- Patients receiving chemotherapy
- Patients who were able to understand and communicate
- Patients willing to participate in the study

## Exclusion Criteria

- Critically ill patients
- Patients with cognitive impairment
- Patients who had already received structured educational interventions

## Data Collection Tools

Data were collected using the following tools:

1. **Structured Questionnaire:**  
Used to assess demographic variables and knowledge regarding chemotherapy side effects.
2. **Treatment Adherence Scale:**  
A standardized scale was used to measure the level of adherence to chemotherapy treatment.

The tools were validated by experts in oncology and nursing, and reliability was established through pilot testing.

## Intervention

The intervention consisted of a **nurse-led educational session** lasting approximately **45–60 minutes**. The session included:

- Explanation of chemotherapy and its purpose
- Common side effects and their management
- Importance of treatment adherence
- Dietary advice and lifestyle modifications
- Psychological support and coping strategies

Educational materials such as pamphlets and visual aids were also provided to reinforce learning.

## Data Collection Procedure

- **Pre-test:** Conducted before the intervention to assess baseline knowledge and adherence levels.
- **Intervention:** Nurse-led education was administered to all participants.
- **Post-test:** Conducted after the intervention to evaluate changes in knowledge and adherence.

## Data Analysis

Data were analyzed using **descriptive and inferential statistics**:

- **Descriptive statistics:** Frequency, percentage, mean, and standard deviation
- **Inferential statistics:** Paired *t*-test was used to compare pre-test and post-test scores
- Significance was set at  **$p < 0.05$**

## Results

The present study aimed to evaluate the effectiveness of nurse-led education on treatment adherence and management of chemotherapy side effects among cancer patients. The data collected from 100 participants were analyzed using descriptive and inferential statistics.

### Section I: Description of Sample Characteristics

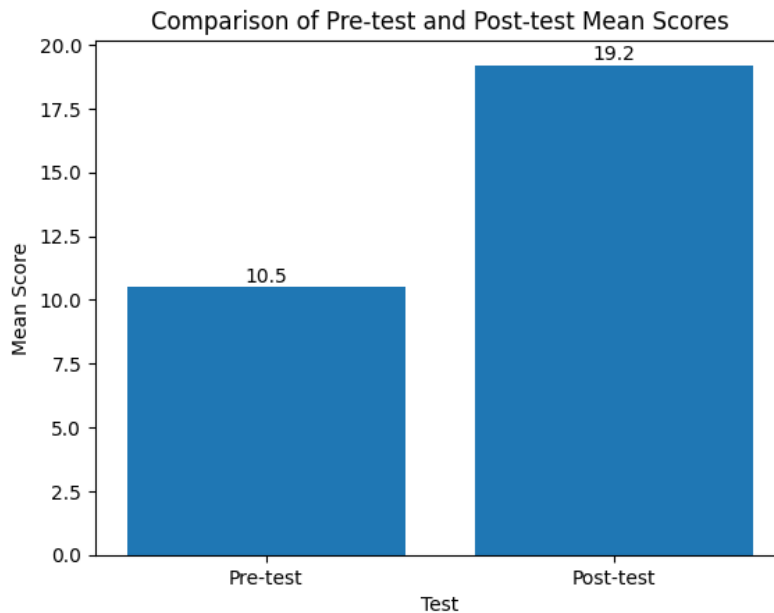
The majority of participants were in the age group of 41–60 years. Both male and female patients were included, with a slightly higher proportion of females. Most participants had secondary-level education and were undergoing chemotherapy for the first or second cycle. A significant number of patients had limited prior knowledge regarding chemotherapy side effects and their management.

### Section II: Effectiveness of Nurse-Led Education on Treatment Adherence

*Table 1: Comparison of Pre-test and Post-test Adherence Scores*

Test	Mean	SD	Mean Difference	t-value
Pre-test	10.5	2.8		
Post-test	19.2	2.1	8.7	16.45*

(\* $p < 0.05$ , Significant)



**Interpretation**

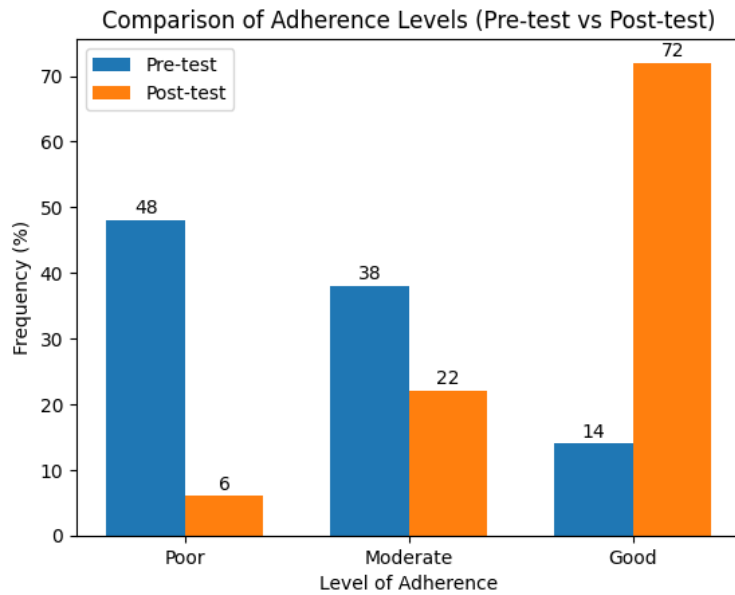
The mean post-test adherence score ( $19.2 \pm 2.1$ ) was significantly higher than the pre-test score ( $10.5 \pm 2.8$ ). The calculated *t-value* (16.45) was found to be statistically significant at the 0.05 level, indicating that the nurse-led educational intervention was highly effective in improving treatment adherence among chemotherapy patients.

**Section III: Improvement in Knowledge Regarding Chemotherapy Side Effects**

Following the intervention, a marked improvement was observed in patients’ knowledge regarding chemotherapy side effects and their management. Patients demonstrated better understanding of symptom recognition, self-care practices, and preventive measures such as infection control and nutritional management.

**Section IV: Level of Adherence (Pre-test vs Post-test)**

Level of Adherence	Pre-test f (%)	Post-test f (%)
Poor	48 (48%)	6 (6%)
Moderate	38 (38%)	22 (22%)
Good	14 (14%)	72 (72%)



**Interpretation**

Before the intervention, the majority of patients (48%) had poor adherence, whereas after the nurse-led education, a significant proportion (72%) demonstrated good adherence. This indicates a substantial positive impact of the educational program.

**Section V: Association Between Adherence and Demographic Variables**

Variable	$\chi^2$ Value	df	p-value	Significance
Age	5.87	2	0.053	Not Significant
Gender	2.14	1	0.143	Not Significant
Education	9.62	3	0.022	Significant*
Type of Cancer	7.85	3	0.049	Significant*

(\*p < 0.05)

**Interpretation**

There was a statistically significant association between treatment adherence and variables such as education level and type of cancer. However, no significant association was found with age and gender.

**Overall Findings**

- Nurse-led education significantly improved treatment adherence among chemotherapy patients.
- Knowledge regarding chemotherapy side effects increased notably after the intervention.
- The proportion of patients with good adherence increased substantially.
- Certain demographic variables influenced adherence levels.

**Discussion**

The findings of the study indicate that structured nurse-led education significantly enhances patient adherence to chemotherapy treatment. Improved knowledge regarding side effects leads to better symptom management and reduced anxiety.

These findings are consistent with previous studies showing that patient education improves compliance and clinical outcomes. Nurses act as key facilitators in bridging the gap between treatment and patient understanding.

## Conclusion

Nurse-led educational interventions are highly effective in improving treatment adherence and management of chemotherapy side effects. Integrating such programs into routine oncology care can significantly enhance patient outcomes.

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