

EFFECTIVENESS OF EDUCATIONAL INTERVENTION ON KNOWLEDGE CONCERN SELF CARE PRACTICE TO PREVENT NEUTROPENIA AMONG PATIENTS RECEIVING TREATMENT FOR CANCER

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ABSTRACT:

Background: Cancer remains one of the foremost global health concerns. According to the World Health Organization, cancer accounted for nearly 10 million deaths worldwide in 2020. In India, the burden of cancer is growing rapidly, driven by urbanization, lifestyle changes, environmental exposures, and an ageing population. By 2022, India reported over 1.3 million new cancer cases annually, with Tamil Nadu ranking among the top states in both incidence and mortality. Cancer treatment typically involves surgery, radiotherapy, chemotherapy, targeted therapies, or combinations. **Objectives:** (i) To assess the pre-test and post-test level of knowledge concern selfcare practice to prevent neutropenia among patients receiving treatment for cancer. (ii) To evaluate the effectiveness of educational intervention on knowledge concern selfcare practice to prevent neutropenia among patients receiving treatment for cancer. (iii) To find out the association between the post-test level of knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer with their selected socio-demographic and clinical variables. **Methodology:** A pre- experimental one group pre-test post-test research design was chosen for this study. 50 samples were selected by using non-probability purposive sampling technique. The pre-test and post-test level of knowledge was assessed through the self structured knowledge questionnaire on prevention of Neutropenia. **Results:** The finding shows that, the pre test mean was 12.76 with the standard deviation of 6.28 and the post-test mean was 19.1 with the standard deviation of 6.8. The mean difference between pre-test and post-test was 6.34 with the standard error of 0.45 and t-value 14.09 was highly significant at $p < 0.05$. **Conclusion:** The study concluded that the Educational intervention was effective in improving the knowledge regarding prevention of Neutropenia among patients receiving treatment for cancer.

Keywords: Selfcare Practice, Neutropenia, Treatment for Cancer.

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INTRODUCTION:

Cancer is typically managed through a combination of treatment modalities, including surgery, radiotherapy, chemotherapy, targeted agents, immunotherapeutic strategies, and hormonal interventions.¹ Side effects from cancer treatment arise when healthy cells are unintentionally harmed or when certain organs are surgically removed. These effects can vary widely and may influence different aspects of a patient's physical and emotional health. They can result from the cancer itself, the specific treatment method used, or individual patient-related factors.² Neutropenia is commonly associated with cancer management, especially chemotherapy, which affects almost 50% of the patients who receive it. Effectively managing neutropenia requires a comprehensive approach. This includes pinpointing and removing possible

causes, such as medications that may be contributing to reduced neutrophil levels. Maintaining excellent oral hygiene is essential to prevent infections in the mouth and gums. In some situations especially when a significant drop in neutrophils is anticipated prophylactic antibiotics may be recommended to lower the risk of serious infections. Additionally, adopting preventive lifestyle practices is key; individuals should take care to avoid exposure to infectious agents in their everyday environments to reduce the chance of complications.³

OBJECTIVES OF THE STUDY

1. To assess the pre-test and post-test level of knowledge concern selfcare practice to prevent neutropenia among patients receiving treatment for cancer.
2. To evaluate the effectiveness of educational intervention on knowledge concern self-care

EFFECTIVENESS OF EDUCATIONAL INTERVENTION ON KNOWLEDGE CONCERN SELF-CARE PRACTICE TO PREVENT NEUTROPENIA AMONG PATIENTS RECEIVING TREATMENT FOR CANCER

practice to prevent neutropenia among patients receiving treatment for cancer.

- To find out the association between the post test level of knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer with their selected socio-demographic and clinical variables.

HYPOTHESIS

H₁: There is a significant difference between pre-test and post-test level of knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer.

H₂: There is a significant association between the post test level of knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer with their selected socio-demographic and clinical variables.

MATERIALS AND METHODS

A pre-experimental one group pre-test and post-test research design was chosen for this study. 50 patients receiving treatment for cancer were selected by using non-probability purposive sampling technique. Based on the sample selection criteria as; **Inclusion Criteria:** Patient with Cancer who receiving chemotherapy, radiation therapy and combination of both, aged between 18 to 70 years, diagnosis of all types of cancer. **Exclusion criteria:** Patient with a history of neutropenia or febrile neutropenia, receiving Palliative care or hospice service, severe illness or other co-morbid condition. Knowledge was assessed using a structured knowledge questionnaire. Following the pretest, an educational session was conducted, and an information booklet was distributed to the participants. Data were analysed using descriptive and inferential statistics. Significance was considered at $p < 0.05$.

RESULTS

SECTION-I: Frequency and percentage distribution of selected demographic and clinical variables.

Frequency and distribution of **Age in years** 3 (6%) were from 18-30 years, 7 (14%) were from 31 – 40 years, 18(36%) were from 41 – 50 years, 15(30%) were from 51-60 years and 7(14%) were from 61-70 years. **Gender** 19(38%) belongs to male and 31(62%) belongs to female. **Marital status** 1(2%) were single, 34(68%) were married and 15(30%) were widowed. number of children 1(2%) had 1 children, 18(36%) had 2 children, 19(38%) had 3 children, 9(18%) had 4 children and 3(6%) had more than 4 children. **Education status** 28 (56%) were from no basic education, 20 (40%) were from primary education and 2 (4%) were from graduate. **Occupation** 11(22%) were from farmer, 25(50%) were from home maker and 14(28%) were from others. **Family income per month** 43(86%) were from less than Rs. 6767, 2 (4%) were from Rs. 6768 –Rs. 202773 and 5(10%) were from Rs. 5056- Rs.

67586. **Residence** 32 (64%) were from rural and 18 (36%) were from urban. **Previous source of healthcare facilities** 43(86%) was going to government hospital and 7(14%) was using private hospital. **Habits** 4(8%) were smokers, 6(12%) took alcohol, 1(2%) was taking both smoking alcohol, 3(6%) were other and 36(72%) were none of the above.

Clinical Variables

Frequency and distribution of **Type of cancer** 50(100%) had solid tumor. **Stage of cancer** 17(34%) were in stage I and 33(66%) were in stage II. **Treatment type** 22(44%) received chemotherapy, 11(22%) received radiation therapy and 17(34%) received combined therapy. **Treatment cycle or day** 11(22%) were on cycle I, 8(16%) were on cycle II, 10(20%) were on cycle III and 21(42%) were on cycle IV. **Family history of cancer** 10(20%) had family history of cancer and 40(80%) had no history of cancer in family. **Co-morbid condition** none of them having co-morbid condition.

SECTION – II: Frequency and percentage distribution of pre-test and post-test level of knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer.

Table - 1 : Frequency and percentage distribution of pretest and post-test level of knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer.

Level of Knowledge	N=50			
	PRE TEST		POST TEST	
	Freq uency	Perc enta ge	Freq uency	Perc enta ge
Adequate Knowledge	10	20.00	23	46.00
Moderately adequate Knowledge	18	36.00	19	38.00
Inadequate Knowledge	22	44.00	8	16.00

The table - 1 depicts the level of knowledge concern self-care practice to prevent neutropenia among 50 patient. In the pre-test 22 (44%) of them had inadequate knowledge, 18(36%) of them had moderate level of knowledge and 10(20%) of them had adequate level of knowledge. In the post-test 8 (16%) of them had inadequate level of knowledge, 19(38%) of them had moderate knowledge and 23(46%) of them had adequate level of knowledge.

EFFECTIVENESS OF EDUCATIONAL INTERVENTION ON KNOWLEDGE CONCERN SELF-CARE PRACTICE TO PREVENT NEUTROPENIA AMONG PATIENTS RECEIVING TREATMENT FOR CANCER

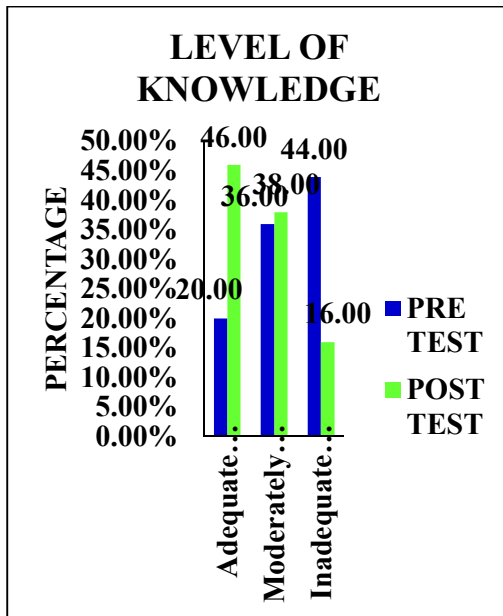


Figure - 1: Frequency and percentage distribution of the pre-test and post-test level of knowledge

SECTION – III: Effectiveness of educational intervention on knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer.

Table - 2: Effectiveness of educational intervention on knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer. N=50

Observation	Mean	Standard Deviation	Mean Difference	Standard Error	T Value
Pre test	12.76	6.28	6.34	0.45	14.09** HS
Post test	19.1	6.8			

** p<0.05 Highly significant

This table - 2 depicts that pre-test mean score was 12.76 with the standard deviation of 6.28 and the post - test mean score was 19.1 with the standard deviation of 6.8. The mean difference was 6.34 with a standard error of 0.45. The t value 14.09 shows highly significance at the p < 0.05 level. It indicates there was significant difference between pre-test and post-test level of knowledge concern selfcare to prevent neutropenia among patients receiving treatment for cancer.

SECTION- IV: Association between the post-test level of knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer with their selected socio-demographic and clinical variable

Table - 3: Association between the post-test level of knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer with their selected socio-

demographic variable.

N=50

S.No	Demographic variables	Chi Square	p Value
1	Age in years	8.66 DF=8	0.371 NS
2	Gender	2.859 DF=4	0.581 NS
3	Marital status	2.548 DF=6	0.863 NS
4	Number of children	6.794 DF=10	0.744 NS
5	Educational level	6.194 DF=6	0.401 NS
6	Occupation	7.8 DF=8	0.453 NS
7	Family monthly income status	3.368 DF=10	0.971 NS
8	Residence	1.139 DF=4	0.888 NS
9	Previous Source of health facilities	0.425 DF=4	0.980 NS
10	Habits	14.564 DF=8	0.068 NS

*p<0.05 significant

Table - 3 depicts there was no significant association between post test level of knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer with selected socio-demographic variables.

Table 4: Association between the post-test level of knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer with their selected clinical variables.

N=50

S.No	Clinical variable	Chi Square	p Value
1.	Types of cancer	0 DF=4	1 NS
2	Stages of cancer	1.709 DF=6	0.944 NS
3	Treatment types	5.839 DF=6	0.441 NS
4	Treatment Day	6.228 DF=6	0.398 NS
5	Family history of cancer	1.83 DF=2	0.4 NS
6	Co morbid condition	0 DF=2	1

*p<0.05 significant

Table - 4 depicts there was no significant association between post test level of knowledge concern selfcare practice to prevent neutropenia

EFFECTIVENESS OF EDUCATIONAL INTERVENTION ON KNOWLEDGE CONCERN SELF-CARE PRACTICE TO PREVENT NEUTROPENIA AMONG PATIENTS RECEIVING TREATMENT FOR CANCER

with selected clinical variables of patients receiving treatment for cancer.

DISCUSSION

The first objective of the study was “To assess the pretest and post-test level of knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer”.

In the pre-test 22 (44%) of them had inadequate knowledge, 18(36%) of them had moderate level of knowledge and 10(20%) of them had adequate level of knowledge. In the post-test 8 (16%) of them had inadequate level of knowledge, 19(38%) of them had moderate knowledge and 23(46%) of them had adequate level of knowledge.

The second objective of the study was “To evaluate the effectiveness of educational intervention on knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer”

Pre-test mean score was 12.76 with the standard deviation of 6.28 and the post-test mean score was 19.1 with the standard deviation of 6.8. The mean difference was 6.34 and standard error was 0.45. The ‘t’ value was 14.09 shows highly significance at the $p < 0.05$ level. Hence it indicates that there was significant difference between pre-test and post-test knowledge concern selfcare practice to prevent neutropenia among patients receiving treatment for cancer.

H₁ -There is a significant difference between pretest and post test level of knowledge concern selfcare practice to prevent neutropenia among patients receiving treatment for cancer. **Hence H₁ Hypothesis was accepted**

The study was supported by **Nongkran Viseskul et al, (2025)** conducted a quasi-experimental study on Effectiveness of using online instructional video for preventing infections among Thai patients with cancer. The participants consisted of 54 patients with cancer. The data were gathered using demographic data questionnaire, a knowledge test, an infection prevention practice questionnaire, and a video media satisfaction questionnaire. Statistical analysis was performed using descriptive statistics, the Chi-square test, Fisher’s exact test, paired t-test, and independent t-test. Following the delivery of the online instructional video, participants in the experimental group exhibited a statistically significant enhancement in their knowledge related to infection prevention. Their mean knowledge score increased from 17.52 to 20.93 ($t = -6.575$, $p < 0.001$). Similarly, a significant improvement was noted in their infection prevention practices, with scores rising from 52.07 to 61.33 ($t = -3.954$, $p = 0.001$). In contrast, the control group showed no statistically meaningful change in knowledge (17.04 to 18.04; $t = -1.328$, $p = 0.100$) or in practice scores (53.41 to 54.44; $t = -0.797$, $p = 0.217$). Post-intervention comparisons between

groups revealed that the experimental group scored significantly higher in both knowledge ($t = 4.473$, $p < 0.001$; Cohen’s $d = 1.22$) and practice ($t = 3.121$, $p = 0.002$; Cohen’s $d = 0.85$), indicating large effect sizes. These findings highlight the effectiveness of online video-based education in improving both knowledge and self-care practices related to infection prevention among cancer patients.

The third objective of the study was “To find out the association between the post level of knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer with their selected socio-demographic and clinical variables”.

There is no significant association between post test level knowledge with selected socio-demographic and clinical variables.

H₂- There is a significant association between the post test level of knowledge concern selfcare practice to prevent neutropenia among patients receiving treatment for cancer with their selected socio-demographic and clinical variables.

Hence H₂ Hypothesis was rejected.

CONCLUSION

The findings of the study indicate a statistically significant difference between pre-test and post-test knowledge levels, with a t-value of 14.09 at the $p < 0.05$ level, demonstrating that participants' knowledge improved following the educational intervention. Hence the study concluded that educational intervention was effective in enhancing the knowledge concern selfcare practice to prevent neutropenia in patients undergoing cancer treatment.

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EFFECTIVENESS OF EDUCATIONAL INTERVENTION ON KNOWLEDGE CONCERN SELF-CARE PRACTICE TO PREVENT NEUTROPENIA AMONG PATIENTS RECEIVING TREATMENT FOR CANCER

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Table 4.4.2: The association between the post test level of knowledge concern self-care practice to prevent neutropenia among patients receiving treatment for cancer with their selected clinical variables.

N=50

S I. N O	Clinical variabl e	Ina deq uat e	Moder ately adequa te	Ad eq uat e	chi squ are	p va lu e
1.	Types of cancer				0 DF =4	1
	a. Solid tumor	8	19	23		
	a. Hematological cancer	0	0	0		
	b. Others	0	0	0		
2	Stages of cancer				1.7 09 DF =6	0. 94 4 N S
	a. Stage I	2	5	10		
	b. Stage II	6	14	13		
	c. Stage III	0	0	0		
	d. Stage IV and above	0	0	0		
3	Treatment types				5.8 39 DF =6	0. 44 1 N S
	a. Chemotherapy	3	12	7		
	b. Radiation therapy	2	4	5		
	c. Combined therapy	3	3	11		
	d. Surgery	0	0	0		
4	Treatment Day				6.2 28 DF =6	0. 39 8 N S
	a. Cycle I	1	4	6		
	b. Cycle II	1	3	4		

EFFECTIVENESS OF EDUCATIONAL INTERVENTION ON KNOWLEDGE CONCERN SELF CARE PRACTICE
TO PREVENT NEUTROPENIA AMONG PATIENTS RECEIVING TREATMENT FOR CANCER

	c. Cycle III	3	1	6		
	d. Cycle IV	3	11	7		
5	Family history of cancer.				1.83 DF=2	0.4 NS
	a. Yes	3	3	4		
	b. No	5	16	19		
6	Co morbid condition				0 DF=2	1
	a. Yes	0	0	0		
	b. No	8	19	23		

***p<0.05 significant**

Table 4.4.2 depicts there was no significant association between post test level of knowledge concern selfcare practice to prevent neutropenia with selected clinical variables of patients receiving treatment for cancer.