

The Effect of Video Assisted Teaching with Reinforcement Booklet on Knowledge and Self-Care Management among Patients Undergoing Chemotherapy

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Abstract: Objective: The objective of the study was to determine the effectiveness of video assisted teaching with reinforcement booklet on knowledge and self-care behaviour of patients undergoing chemotherapy. Design: A pre-test post-test control group design was used. Samples: 120 patients undergoing chemotherapy and their care givers from the medical oncology and radiation oncology units of AIIMS, Bhubaneswar. Convenient sampling technique, with alternative random assignment to assign subjects to experimental or control group. Method: The control group included patients receiving routine care by health care members, whereas the experimental group included patients and their care givers who received video assisted teaching with informational booklet on self-care management of patients undergoing chemotherapy. Results: Video assisted teaching with reinforcement booklet significantly improved knowledge and self-care behaviour of patients undergoing chemotherapy. Conclusion: Video assisted teaching with reinforcement booklet significantly improved knowledge and self-care behaviour of patients.

Keywords: Video assisted teaching, Self-care behaviour, self-care management, Side effects of chemotherapy

1. Introduction

Globally, cancer is the second leading cause of death which means 1 in 6 deaths is due to cancer. In 2018, cancer was responsible for an approximately 9.6 million deaths.¹ In India, around 2.25 million people are living with the disease and the state of Odisha recorded 47,666 cases with cancer.^{2,3}

Chemotherapy is the most common and acceptable method to treat cancer at present. The treatment is provided for one or more days, after which the patients have a recovery period of several days or weeks before the next treatment session.⁴

The major purpose of chemotherapy is to stop the abnormally dividing cancer cells. However, chemotherapy may affect some normal cells such as mucosal cells in the mouth, stomach and intestine, hair follicles and bone marrow cells and which cause extensive side effects. Patient may also suffer from some complications causing uncomfortable feeling including symptoms like anorexia, nausea, vomiting, fatigue, mouth sores and low white blood cells. Due to changes in physical, mental and social status, self-care behaviour of patients is affected.⁵

There is increase in morbidity, quality of life and length of stay in hospitals due to poor knowledge regarding chemotherapy treatment and managing side effects among patients. The varied side effects of chemotherapy adversely affect the patient's quality of life and physical functioning. The need for symptom management is often left unfulfilled, with patients not receiving adequate help from their healthcare providers. Patients are often unable to manage the symptoms of the disease and the side effects of the treatment. Developing

and improving interventions aimed at managing the side effects of cancer treatment is a priority in cancer care.⁶

Patients undergoing chemotherapy may not perform suggested self-care activities despite chemotherapy-related symptoms. The varied reasons for poor self-care behaviour are patients believe that the side effects are simply endurance, the patient's reluctance to complain, and the professional's reluctance to tell patients if the side effects can be mitigated, and the patient's poor memory of self-care provided to him. Studies conducted on management of pain and fatigue in cancer patients has found that the patient's hesitation to report symptoms and misconceptions about their symptoms and treatment are significant obstacles in management of symptoms.⁷ Patients suffering from cancer experience physical, emotional and social problems apart from the problems in their family and work life. This in turn affects the patient's quality of life with ongoing chemotherapy. Self-efficacy has a positive influence on adherence to cancer treatment, health behaviour, symptom control and quality of life. Well planned comprehensive patient education programmes has a positive effect on psychosocial and self-management skills, indicating that this aspect should be given importance.⁸

This study has been conducted to examine the effect of video assisted teaching with reinforcement booklet on self-care management among patients undergoing chemotherapy.

2. Methods

Sample

This study, was conducted among patients undergoing chemotherapy in the Medical oncology ward and the day care

units of Medical and Radiation Oncology departments of All India Institute of Medical Sciences, Bhubaneswar. The study was conducted among 120 samples, 60 each in experimental and control group. Alternative random assignment was used to assign subjects to experimental or control group.

IEC permission was obtained from institutional ethical committee. Informed consent was obtained from the study participants.

Inclusion criteria:

- 1) Patients, who are able to read, write and understand Odia / Hindi or English.
- 2) Patients who have undergone at least one cycle of chemotherapy.
- 3) Patients above the age of 18 years.

3. Data Collection Instruments

Socio-demographic Performa: It was developed by the investigator to collect demographic characteristics and clinical data. Content validity index was 0.84.

Knowledge Questionnaire was developed by the researcher to assess the knowledge regarding management of side effects of chemotherapy. The questionnaire consists of 22 questions related to self-care management of patients with emphasis on management of side effects of chemotherapy. Content validity index was 0.86. Reliability was established by test re test method. The reliability coefficient was 0.84.

Self-care behaviour rating scale was developed by the researcher to assess the self-care management behaviour among the cancer patients undergoing chemotherapy. The tool consists of 38 questions for self-rating of self-care behaviour. Scoring was given as 1 for never, 2 for seldom, 3 for usually and 4 for always. Higher the total score, higher is the self-care behaviour. Content validity index was 0.83. Reliability of the tool was established by test retest method by administering the tool to 20 patients and the reliability coefficient of the tool was 0.8.

Intervention

The basic components of the video assisted teaching and reinforcement booklet were developed to address the problems that were common to cancer patients undergoing chemotherapy. The teaching was focused mainly on self-care management of side effects of chemotherapy. Content of video-assisted teaching and information booklet was focussed to enhance the knowledge regarding management of side effects of chemotherapy so as to reduce the impact of side-effects of chemotherapy and to enhance self-care behaviour while undergoing chemotherapy among cancer patients. It included management of the side effects of chemotherapy such as myelosuppression constituting neutropenia, thrombocytopenia and anaemia, gastro-intestinal effects constituting nausea and vomiting, anorexia, stomatitis, diarrhoea and constipation, integumentary effects constituting alopecia and skin reactions and oncologic emergencies constituting infection and pain. The duration of the video assisted teaching was 30 minutes.

Data Collection

Cancer patients undergoing chemotherapy admitted in the medical oncology ward and medical oncology and radiotherapy day care units were recruited for the study. The knowledge of the patients was assessed by knowledge questionnaire and the self-care behaviour of the patients were assessed with the self-care behaviour tool. The video assisted teaching and information booklet was given to the patients in the intervention group and the control group received the routine care. The investigator provided intervention to patients. The intervention was given by projecting video and giving reinforcement booklet. Video was shown to the patients for 30 minutes. The intervention was given in small groups of 3-4 patients. Patients were instructed to follow and practice the interventions. The post test was done on day 14 and 21 as the chemotherapy cycles were once in seven days, fourteen days and twenty-one days.

4. Results

The median age of the patient in experimental group was 55 with IQR 19 and in the control, group was 50 with IQR 19. Majority were males 55% in experimental group whereas 56.7% were females in control group. In the experimental group 71.7% and control group 86.7% had stage III cancer.

Table 1: Comparison of socio-demographic variables of the patient in both experimental and control group, n=120

Variable	Experimental group (n=60) f (%)	Control group (n=60) f (%)	Test statistics p value
Age			
Patient median (IQR)	55(19)	50(19)	Z=1.9 P=0.5
Gender			
Male	33 (55.0)	26(43.3)	$\chi^2= 1.634^a$ p= 0.201
Female	27 (45.0)	34(56.7)	
Religion			
Hindu	58 (96.7)	57(95.0)	$\chi^2= 0.342^a$ p= 0.843
Muslim	01 (1.7)	1 (1.7)	
Christian	01 (1.7)	2 (3.3)	
Marital Status			
Unmarried	05 (8.3)	06(10.0)	$\chi^2= 0.767^a$ p= 0.681
Married	51 (85.5)	52(86.7)	
Widowed	04 (6.7)	02 (3.3)	
Place of living			
Rural	34(56.7)	37(61.7)	$\chi^2= 0.310^a$ p= 0.577
Urban	26(43.3)	23(38.3)	

Table 2: Comparison of clinical variables of patients in both experimental and control group, n=120

Variable	Experimental group (n=60) f (%)	Control group (n=60) f (%)	Test statistics p value
Family history of Cancer			
Yes	03(5.0)	08(13.3)	$\chi^2= 2.502^a$ p= 0.114
No	57(95.0)	52(86.7)	
How many times received chemotherapy?			
≤ 3	20(33.3)	22(36.7)	$\chi^2= 4.658^a$ p= 0.199
4-7 cycle	31 (51.7)	23(38.3)	
8-12 cycle	04 (6.7)	11(18.3)	

> 12 cycle	05 (08.3)	04(06.7)	
Duration of illness			
Less than 3 months	08 (13.3)	10(16.7)	$\chi^2= 3.897^a$ p= 0.273
3-6 months	32(53.3)	25(41.7)	
7-12 months	10 (16.7)	18(30.0)	
> 12 months	10 (16.7)	07(11.7)	
Site of cancer			
Head & Neck Malignancy	10(16.7)	02(3.3)	Fishers exact test p= 0.148
Hepato-pancreaticobiliary	04(6.7)	01(1.7)	
Gynaecological Malignancy	04(6.7)	02(3.3)	
Genito Urinary malignancy	01(1.7)	01(1.7)	
Gastrointestinal	08(13.3)	11(18.3)	
Lymphoid neoplasm	13 (21.7)	21 (35.0)	
Myeloid neoplasm	04 (6.7)	02(3.3)	
Breast cancer	16(26.7)	19(31.7)	
Lung Cancer	0	01(1.7)	
Stage of cancer			
Stage II	03 (5.0)	04(6.7)	$\chi^2= 6.551^a$ p= 0.038
Stage III	43 (71.7)	52(86.7)	
Stage IV	14(23.3)	04(6.7)	

Table 3: Comparison of knowledge score between experimental and control group across time, n=120

Variable	Experimental group (n=60) f (%)	Control group (n=60) f (%)	Test statistics p value
Presence of co-morbid disease			
Diabetes	03(5.0)	06(10.0)	Fishers exact test p= 0.663
Hypertension	06(10.0)	04(6.7)	
Stroke	01(1.7)	0	
None	48(80.0)	48(80.0)	
More than one	02 (3.3)	02(3.3)	
Katz Index of Independence in Activities of Daily Living (ADL)			
0-1	0	01(1.7)	Fishers exact test p= 0.595
2-3	02(3.3)	02 (3.3)	
4-5	12(20.0)	08(13.3)	
6	46 (76.7)	49(81.7)	
ECOG Performance status			
0-1	42 (70)	47 (78.3)	Fishers exact test p= 0.404
2-3	17 (28.3)	13 (21.7)	
3-4	01 (1.7)	0	
Source of information regarding disease condition			
Mass media	02 (3.3)	3 (05)	Fishers exact test p= 0.523
Doctor/ nurse	55 (91.7)	49 (81.7)	
Relatives	02 (3.3)	4 (6.7)	
Family members	01 (1.7)	03 (05)	
Friends	0	01 (1.7)	

Table 4: Within group and between group comparison of knowledge score between experimental and control group across time, n= 120

Time	Experimental group n ₁ = 60 mean (SD)	Control group n ₂ = 60 mean (SD)	Between group*time Test statistic P value
Pre-test	5.48 (3.18)	6.85(3.86)	F=68.718 P<0.001*
Post-test	14.18(3.21)	8.45(4.09)	
Mean difference	8.7	1.6	
Standard error	0.4	0.36	
Within subjects *time	p<0.001		

F-Repeated measures ANOVA, level of significance p<0.05

Table 4 depicts within group and between group comparison of knowledge score between experimental and control group across time.

Repeated measures ANOVA with Greenhouse-Geisser correction shows that, within the group difference of mean knowledge score across time in experimental group is 8.7 and 1.6 in the control group respectively. Between the group difference in the mean knowledge score is more in experimental group as compared to control group which is statistically significant across two time points (F=13.59, p <0.00).

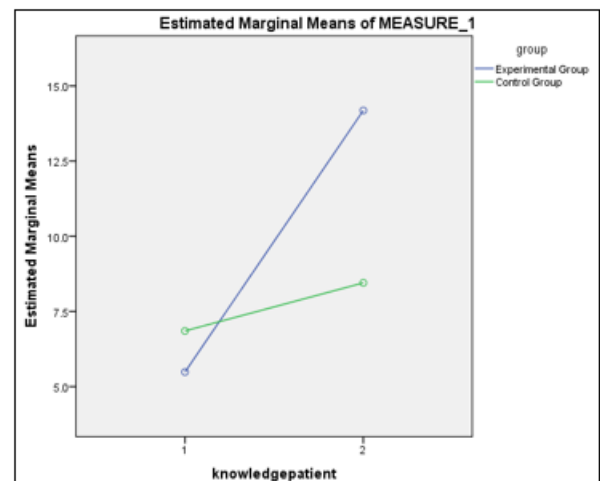


Figure 1: Bonferroni Post Hoc comparison of mean knowledge scores between experimental and control group across time (n=120)

Post hoc test using the Bonferroni correction revealed that there is slight improvement in mean Post-test knowledge score in the control group (Mean difference), but it was not statistically significant (p 0.001). However, the post-test mean knowledge score in the experimental group showed a significant improvement as compared to pre-test mean knowledge score (Mean difference 8.7), which was statically significant (p<0.001).

Table 5: Within group and between group comparison of self-care behavior score between experimental and control group across time, n= 120

Time	Experimental group n ₁ = 60 mean (SD)	Control group n ₂ = 60 mean (SD)	Between group*time Test statistic P value
Pre-test	82.50 (12.68)	87.35 (11.35)	F=68.718 P<0.001*
Post-test	100.22 (7.02)	91.10 (7.98)	

Mean difference	17.7	3.7	
Standard error	1.3	1.1	
Within subjects*time	p<0.001		

F-Repeated measures ANOVA, level of significance $p < 0.05$

Table 5 depicts within group and between group comparison of self-care behavior score between experimental and control group across time.

Repeated measures ANOVA with Greenhouse-Geisser correction shows that, within the group difference of mean self-care behaviour score across time in experimental group is 17.7 and 3.7 in the control group respectively. Between the group difference in the mean self-care behaviour is more in experimental group as compared to control group which is statistically significant across two time points ($F=68.71$, $p < 0.00$).

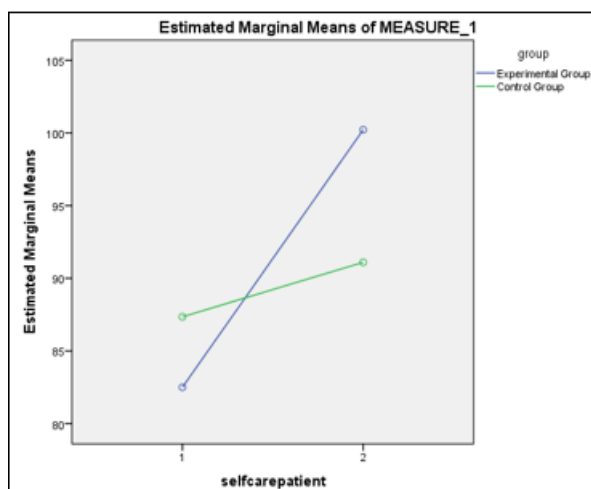


Figure 2: Bonferroni Post Hoc comparison of mean of self-care behavior score scores between experimental and control group across time ($n=120$)

Post hoc test using the Bonferroni correction revealed that there is slight improvement in mean Post-test self-care behavior score in the control group (Mean difference), but it was not statistically significant ($p > 0.001$). However, the post-test mean self-care behavior score in the experimental group showed a significant improvement as compared to pre-test mean self-care behaviour score (Mean difference 17.7), which was statically significant ($p < 0.001$). Hence intervention elicits a statistically significant improvement in self-care behavior score after video assisted teaching with reinforcement booklet in the experiment group only.

5. Discussion

In the present study Repeated Measures ANOVA with Greenhouse-Geisser correction shows that, within the group difference of mean knowledge score across time in experimental group is 8.7 and 1.6 in the control group. Between the group difference in the mean knowledge score is more in the experimental group as compared to the control group which is statistically significant across two time points ($F=13.59$, $p < 0.00$). Post hoc test using the Bonferroni correction revealed that the post-test mean knowledge score in the experimental group showed a significant improvement as compared to pre-test mean knowledge score (Mean difference 8.7) which was statically significant ($p < 0.001$). The

video assisted teaching with reinforcement booklet elicited statistically significant improvement in the knowledge scores of the patients undergoing chemotherapy. Similar findings were reported in an RCT which examined the effects of a video game, the knowledge scores of the intervention group improved significantly.⁹ A systematic review on 14 articles involving 2374 participants also reported that internet or interactive computer-based patient education programs may have positive effect in increasing the knowledge of breast cancer patients.¹⁰ Patient teaching by nurses showed improvement in knowledge among neutropenic patients undergoing chemotherapy ($p < 0.01$).¹¹ A study conducted in 38 cancer patients in Karad also reported that information booklet is effective method for improving the knowledge level of cancer patients regarding self-care during chemotherapy at $p < 0.0001$.¹²

In the present study the repeated measures ANOVA with Greenhouse-Geisser correction shows that, within the group difference of mean self-care behavior of patients across time in experimental group was 17.7 and 3.7 in the control group respectively. Between the group difference in the mean knowledge score is more in experimental group as compared to control group which was statistically significant across two time points ($F=68.71$, $p < 0.00$). The video assisted teaching with informational booklet elicited statistically significant improvement in the self-care behavior scores of the patients undergoing chemotherapy. Similar findings were reported in many studies wherein individualized nurse-given patient education with a teaching book on managing the side effects of chemotherapy was found to be statistically significant in improving self-care behaviours.¹³ Another study also reported significant improvement in self-care strategies carried out by women of the study groups to relieve nausea, vomiting, mouth sores and fatigue ($p=0.000$).¹⁴ Statistically significant improvement was found in the self-care behaviour of neutropenic patients undergoing chemotherapy after the educational intervention ($p < 0.01$).¹⁵ An education program on prevention of febrile neutropenia also showed significant improvement in adherence to hand-washing competence and self-care behaviour.¹⁶ Another study conducted among 71 patients, an educational intervention was found effective in improving self-efficacy and self-management of chemotherapy induced side effects in cancer patients.⁶ Study conducted among 56 women receiving chemotherapy for breast cancer in New Jersey, an intervention with a 5-minute videotape and Self-Care Behaviours booklet and efficacy-enhancing counselling interventions was found to have improved self-care self-efficacy and reduction in symptom distress.¹⁷ Another randomized clinical trial studied the effect of informational audiotapes on self-care behaviours among 70 women receiving chemotherapy. The experimental group reported symptom improvements and increased adherence to recommended self-care behaviours.¹⁸

A randomized control trial on patients who have undergone treatment for prostate cancer ($N=250$) also reported improvements in positive health behaviours.¹⁹ A quasi-experimental study among 52 cancer patients receiving chemotherapy also reported higher of self-efficacy and self-care scores in the experimental group than those of the control group.²⁰ Another study also reported that nurse administered self-efficacy interventions decrease symptom distress,

increase quality of life and promote self-efficacy.¹⁷ Similar findings were reported by Nantaporn Pichaya, that counselling for self-care significantly improved self-care behaviour in the intervention group much better than the control group which received routine advice($p=0.05$).⁵

6. Conclusion

The results of the study revealed that video assisted teaching with reinforcement booklet resulted in significant improvement in knowledge and self-care behaviour of patients undergoing chemotherapy in experimental group after the intervention than the control group. Hence it can be concluded that video assisted teaching with reinforcement booklet was effective in improving the knowledge and self-care behaviour of patients.

7. Limitations

- 1) The potential for response bias may be attributed to self-reporting nature of data.
- 2) Long term effects of self-care behaviour not assessed.

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Conflicts of interest

There are no conflicts of interest

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