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Impact of Video Intervention on Self-Efficacy and Well-Being in Chemotherapy Patients: A Randomized Controlled Trial at a Tertiary Care Center, Southern Gujarat, India

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KEYWORDS

Video intervention, Self-Efficacy, Well-Being, Cancer patients, Chemotherapy

ABSTRACT:

Introduction: Chemotherapy and radiation therapy for cancer often result in significant side effects, impacting patients' quality of life. Despite this, many cancer patients have limited knowledge about chemotherapy's adverse effects and their management

Objectives: To evaluates the impact of a video intervention on the self-efficacy and well-being of chemotherapy patients.

Methods: A total of 100 participants undergoing chemotherapy (cycles 2 through 5) were randomly assigned to experimental and control groups. The pre-test was conducted using a Socio-demographic tool, Symptom-Management Self-Efficacy Scale-Breast Cancer (SMSES-BC), and The Functional Assessment of Cancer Therapy - General (FACT-G) questionnaire. The experimental group received a video intervention addressing multidimensional approaches to improving self-efficacy and well-being, with individual sessions held to address queries. The video was also shared via Whatsapp for further reference. The control group received routine information. A post-test was conducted 7 to 21 days later during the next chemotherapy cycle.

Results: Findings indicated a significant improvement in the experimental group's self-efficacy (mean = 180.16, SD = 45.67) compared to the control group (mean = 94.20, SD = 36.48), with a mean difference of 113.98 (t = 16.34, p = 0.001). Additionally, well-being scores in the experimental group (mean = 82.02, SD = 9.33) were higher than in the control group (mean = 58.84, SD = 9.83), with a mean difference of 26.52 (t = 16.41, p = 0.001)..

Conclusions: Video interventions provide consistent, accurate information, reducing misunderstandings and allowing patients to revisit material, enhancing treatment comprehension and management.

1. Introduction

One of the most significant treatments for cancer patients is chemotherapy. Chemotherapy works by targeting active cells. However, chemotherapy will also cause harm to some normal cells include cells from blood, mouth, digestive system, and hair follicles.[1] Unfortunately, this implies, healthy cells throughout the body become the target of chemotherapy which can have adverse effects on patients.[2]

Cancer sufferers experience numerous physical and psychological symptoms. According to research done by Thomas S. et al (2021), 97% of participants' experienced reduced appetite, extreme tiredness (81.3%), anxiety (86%), alopecia (78.7%), and nausea/vomiting (62.7%).[3] According to a study by Aslam, M. S., et al 2020 on chemotherapy side effects, the percentages of patients experiencing specific side effects are as follows: headaches (43%), tiredness

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(90%), weakness (95%), hair loss (76%), nausea (77%), vomiting (75%), diarrhea (31%), stomach cramps (40%), mouth sores (47%), dry mouth (74%), cognitive impairment (14%), and numbness (49%).[4] While some are early or late side effects of cancer therapy, others are connected to the course of the disease. There has been ample evidence that the severity of these symptoms can have a direct or indirect effect on an individual's physical, psychological, social, and spiritual wellbeing and affect their ability to function normally and reduce the effectiveness of self-care for several months or even years.[5] Furthermore, it can lead to a decrease in productivity at work. Moreover, have a negative impact on a patient's quality of life, typically necessitates more supporting treatments, or delays therapy. Thus, maintaining quality of life and attaining the intended results of cancer therapy through symptom management in cancer patients continues to be a key emphasis area for nursing practice.[5]

The most crucial aspect of supportive cancer care throughout the complete cancer continuum is the dissemination of information to patients.[6] Even though each patient may have unique information preferences and coping processes, giving patients information and social support may enhance their psychological well-being.[7]

In an attempt to address the desire of cancer patients for information about managing their symptoms, a variety of methods have been used to facilitate the passage of information from health professionals and other cancer information sources to cancer patients and their families.[7] These include written material, telephone help-lines, teaching, and audiovisual aids. The multimedia technique is one of the newer ways of education. The use of multimedia improves instructional clarity, makes educational content more intelligible and exciting, broadens patient comprehension, improves learning permanence, boosts patient engagement in learning, and gives appropriate feedback. Multimedia education is described as integrating fundamental media materials such as text, video, music, graphics, and animation and combining them into a learning environment teaching with multimedia is a reasonably cost-effective, time-saving, user-friendly, and accessible way to teach patients.[7] Moreover, Video interventions provide a combination of visual and auditory stimuli, which cater to different learning styles. According to Bandura's social cognitive theory, observing role models or demonstrations through videos can enhance self-efficacy. Cancer patients can see others in similar situations successfully managing symptoms or treatment regimens, making them more confident in their own abilities to cope.[8] Bauer et al. (2020) found that patients who received video interventions were better able to recall critical self-care information compared to those who received only written instructions, leading to better self-management and higher self-efficacy.[9] Thus the study intended to assess the self-efficacy and well-being of patients undergoing chemotherapy, and evaluate the impact of video intervention on these parameters.

2. Objectives

Assess self-efficacy and well-being in chemotherapy patients.

Evaluate the impact of video intervention on self-efficacy and well-being in chemotherapy patients

3. Methods

A Randomized controlled trail was conducted from December 2023 to February 2024 among 100 patients diagnosed with cancer and undergoing standard chemotherapy in cycles 2nd/3rd/4th/5th for the first time. The sample size was calculated by power estimation. Patient who already completed course of chemotherapy previously and those who are totally depended on a caregiver for activities of daily living or who have psychiatric problems or chronically ill were excluded from the study.

Ethical consideration:

The study was conducted after the approval of the Institutional ethical committee, (IEC)–IEC/BU/147/Faculty/02/301/2023 (dated 13.10.2023). An approval was also obtained from both the hospital authority and the head of the oncology department. Informed consent was obtained from all the participants prior to the recruitment. The study is also registered in Clinical Trials Registry-India (CTRI), CTRI Number: CTRI/2023/12/060857

Procedures for data collection:

By using simple random method (lottery method) assigned 100 participants diagnosed with cancer and came for standard chemotherapy in cycles 2nd/3rd/4th/5th for the first time, during December

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2023 to February 2024, and allocated in two groups: experimental and control. Pretest was conducted for the both groups by using Socio-demographic tool, Symptom-Management Self-Efficacy Scale-Breast Cancer (SMSES-BC), and The Functional Assessment of Cancer Therapy - General (FACT-G) questionnaire on the day of chemotherapy which was filled in front of the researcher within 5-10 minutes. The experimental group received video-assisted intervention focused on the multidimensional approaches to improve self-efficacy and well-being along with the routine information from health care personnel. Individual sessions were conducted for each participant and their queries were addressed during the initial session. Average time spend in data collection per patient was 10-15 minutes and 15 minutes to show video 5 minutes to clarify the doubts, a total 35 minutes.. A copy of the video was also shared with participants through whatsapp and control group received information as routine as shared by health care staff. The post-test was conducted on next cycle of chemotherapy which ranged from 7 to 21 days. Data were entered in Microsoft Excel and were analyzed using the Statistical Package for the Social Sciences.

4. Results

The demographic characteristics of individuals in the experimental and control groups are displayed in Table 1. The majority of participants were over 48 years old, with a gender distribution showing a relatively balanced representation in each group. Educational backgrounds varied, with a notable proportion of participants in both groups having no formal education; a small percentage had prior information about chemotherapy. In terms of residence, a larger proportion of participants resided in rural areas.

Table 1: Frequency and percentage distribution of demographic variables of sample in experimental and control group

Demographic Variables	**Experimental Group**		**Control Group**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Age in Year	0	0%		
18-27	3	6%	1	2%
28-37	13	26%	0	0%
38-47	14	28%	12	24%
48-57	20	40%	21	42%
>58			16	32%
Gender				
Male	22	44%	21	42%
Female	28	56%	29	58%
Educational Status				
No Formal Education				
Primary				
Higher	17	34%	17	34%
Secondary	16	32%	20	40%
Graduate	7	14%	9	18%
Post	9	18%	4	8%
Graduate	1	2%	0	0%
Place of Residence				
Urban	17	34%	15	30%
Rural	33	66%	35	70%
Side effects Chemotherapy				
Yes	50	100%	49	98%
No	0	0%	1	2%
Diagnosis				
CA Breast	17	34%	11	22%
CA Oral	10	20%	17	34%
CA Cervix	4	8%	3	6%
CA Vault	3	6%	1	2%
Other	16	32%	18	36%
Treatment Regimen				
Chemotherapy	43	86%	42	84%
Chemo and Radiation	7	14%	8	16%
Number of Cycle of Chemo				
2nd Cycle	40	80%	36	72%
3rd Cycle	10	20%	13	26%
4th Cycle	0	0%	1	2%
Duration of				

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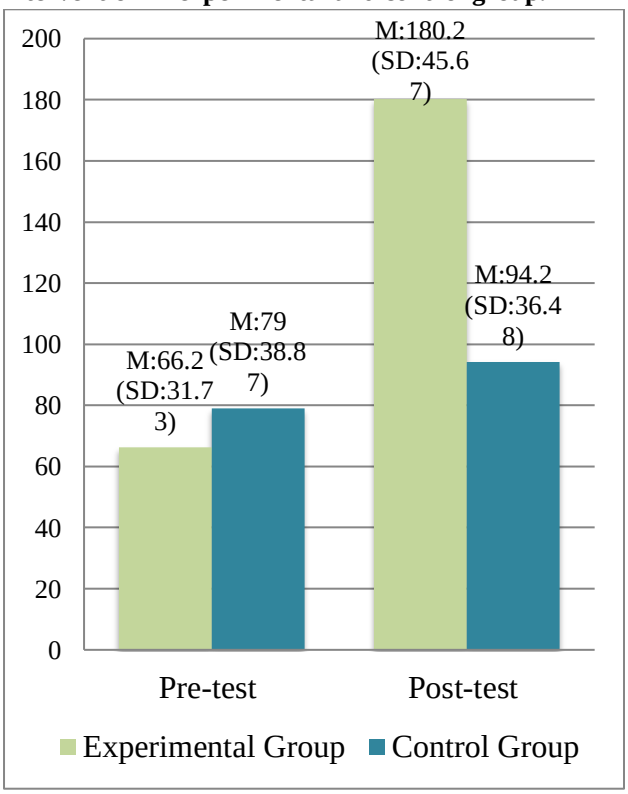
Chemotherapy 21 Days 7 Days	40 10	80% 20%	36 14	72% 28%
Comorbid Illness Yes No	15 35	30% 70%	16 34	32% 68%
Previous Information Yes No	3 47	6% 94%	4 46	8% 92%

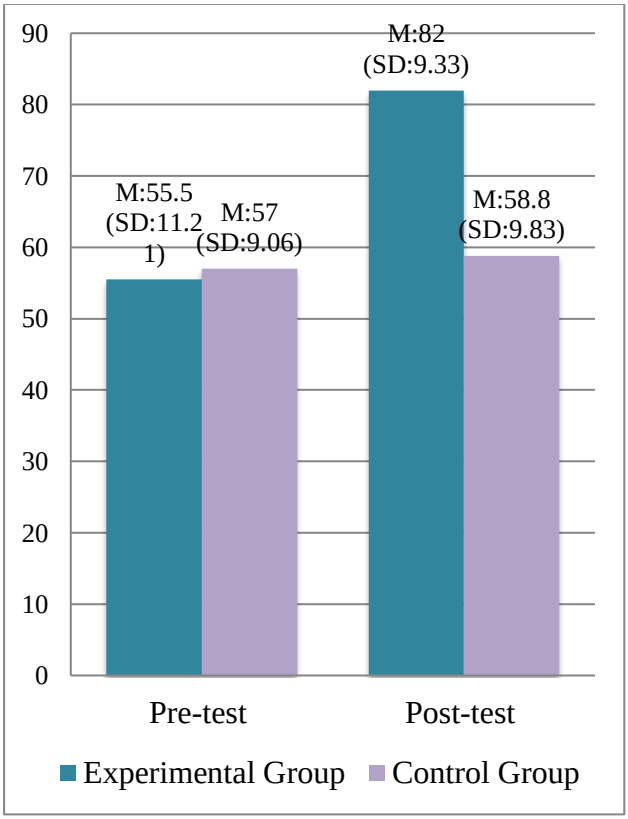
The video intervention significantly improved self-efficacy in the experimental group compared to the control group [Graph 1]. Both groups experienced positive impacts on well-being, with the experimental group showing more substantial improvements [Graph 2].

Graph: 1 Comparison of Mean and Standard Deviation of Self Efficacy score, pre and post Intervention in experimental and control group.



***M- Mean, SD: Standard deviation**

Graph: 2 Comparison of Mean and Standard Deviation of Well-being score, pre and post Intervention in experimental and control group among patients



***M- Mean, SD: Standard deviation**

Analysis of paired differences in mean scores, standard deviations (SD), t-scores, degrees of freedom (df), and p-values for pretest and posttest measurements in both groups demonstrated significant enhancements in self-efficacy scores of experimental group, indicating that the video intervention effectively bolstered patients' confidence in managing treatment-related challenges [Table 2]. Additionally, the Intervention positively influenced overall well-being scores, highlighting its beneficial impact on patients' well-being during chemotherapy [Table 3]. The chi-square analysis explored the association between mean differences in self-efficacy and well-being levels among chemotherapy patients and their selected demographic variables. The analysis revealed that Comorbid illness was significantly associated with self-efficacy levels. However, no demographic variables showed a significant association with well-being levels.

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Table 2: The paired t-test comparison to assesses the effectiveness of a video-assisted health education program on self-efficacy and well-being among patients undergoing chemotherapy at a tertiary cancer center

Group	Paired t test Comparison between Pretest and Posttest	Paired Differences		Paired - t score	df	P-Value
		Mean Enhancement	SD			
Experimental Group	Self-Efficacy Pretest and Posttest	113.98	49.30	**16.34**	**49**	**.000 S**
	Well-being Experimental groupPretest and Posttest	26.52	11.42	**16.41**	**49**	**.000 S**
Control Group	Self-Efficacy Pretest and Posttest	15.18	13.10	8.18	49	.000 S
	Well-being Control group Pretest and Posttest	1.800	9.269	1.37	49	.176 NS

**S-Significant at 5% level (p<0.05), NS-Not significant at 5% level (p>0.05), df: Degree of freedom.

Table 3: Comparison of Self Efficacy and Well-being Scores Between Experimental and Control Groups: Independent t-Test Analysis

Independent Sample t-test for Equality of Means Comparison						
VARIABLES	**Groups**	**Mean Score**	**Std. Deviation**	**Mean Difference Score**	**Independent t-test**	**P-Value**
Self Efficacy	Pretest Experimental	66.18	31.73	12.8	1.81 df=98	Sig 0.073 NS
	Pretest Control	79.02	38.87			
	Posttest Experimental	180.16	45.67	**86**	**10.40 df=98**	**Sig 0.000 S**
	Posttest Control	94.20	36.48			
Well-being	Pretest Experimental	55.50	11.21	1.5	0.76 df=98	Sig0.452 NS
	Pretest Control	57.04	9.06			
	Posttest Experimental	82.02	9.33	**23.2**	**12.09 df=98**	**Sig 0.000 S**
	Posttest Control	58.84	9.83			

**S-Significant at 5% level (p<0.05), NS-Not significant at 5% level (p>0.05).

5. Discussion

The results of this study demonstrated that the video intervention significantly enhanced self-efficacy in the experimental group compared to the control group. Initially, the mean self-efficacy score was 66.2 in the experimental group and 79.0 in the control group. Following the intervention, the experimental group's mean score rose to 180.2, while the control group's score increased to 94.2. These findings align with previous research by Hoffman et al. (2017) demonstrated that cancer patients who watched instructional videos at home reported higher levels of confidence in managing their care compared to those who attended in-person education sessions [10] Panbude et al. (2021), which indicated a significant knowledge increase following the provision of an information booklet.[11] Similarly, Arunachalam et al. (2021) suggested that understanding chemotherapy side effects improves self-care practices[12], and A study by Marcus et al. (2019) found that personalized video content that addressed individual concerns and stage of treatment led to a greater increase in self-efficacy compared to generic information delivered through pamphlets or brochures.[13] A study by Lee et al. (2018) showed that cancer patients exposed to video-based educational interventions had significantly higher self-efficacy in managing symptoms compared to those who received

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only written or verbal education.[14] Additionally, the study found a notable positive impact on well-being in both groups, with the experimental group showing a more substantial improvement. The mean well-being score increased from 55.5 to 82.0 in the experimental group, compared to an increase from 57.0 to 58.8 in the control group. This is consistent with Abd E (2020), who reported improvements in patients' knowledge, self-care practices, and quality of life following a self-care education program[15], and Nayak (2016), who found a multicomponent intervention effective in improving quality of life.[16] Overall, the video-assisted health education program significantly increased the well-being score from pretest (55.5) to posttest (82.0) in the experimental group. In contrast, the control group showed a smaller increase from 57.0 to 58.8. These results are consistent with Ünal Toprak (2021), who reported that video-assisted education effectively improved the quality of life for women undergoing chemotherapy.[17]

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