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Effect of Behavioral Intervention on Reducing Symptom Severity during First Course Chemotherapy

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Abstract*:*
Background *Recent evidence suggests that cancer treatments have become more distress. The need for new techniques to manage pain, nausea, and other side effects are more necessary. Alternative interventions are more common used with chemotherapy patients. Patients with all tumor types need to use alternative intervention to decrease aversive side effects of chemotherapy.* ***Aim.*** *This study was carried out to evaluate the effect of Behavioral Intervention on reducing physical and psychological symptoms among cancer patients undergoing chemotherapy.*
Method *A Quasi experimental comparative research design study was conducted in Cancer Institute at Menoufiya University Hospital. The data were collected from 119 adult patients male and female, with chemotherapy treatment. These were randomly divided into two groups: the first one is study and the second is control group (59&60 patients respectively). A questionnaire pre and post test was used to collect data on sociodemographic characteristics****Tool I:*** *A Structured interview sheet.* ***Tool II :*** *were developed to assist the severity of symptoms, their impact on distress, and physical function [54,55].*
The results *revealed to that, the study group had improved and reduced physical and psychological symptoms comparing the initial intervention with the final intervention. While symptom severity decreased gradually compared to control group 28.6±18.7 symptom severity after third session and progress to 29.6±18.9 had severe symptom severity baseline at the end of intervention.*
Conclusion: *Enrichment of patients with knowledge about chemotherapy and Behavioral Intervention showed an improvement was seen in physical and psychological symptoms. In addition, a significant reduction in symptom severity was found among patient undergoing chemotherapy.*
Key words: *Behavioral Intervention, physical and psychological symptoms of chemotherapy.*

I. Introduction

Twenty-five years ago, demonstrated severity of symptoms reported by chemotherapy patients, chemotherapy treatment can cause many problems for patients[1,2,8]. It feels an unpleasant experience of an emotional, psychological and physical that interferes with the ability to cope with cancer treatment[3,4,10]. Then, attempt to reduce the problems that is associated with cancer treatment experience. Most people prefer feeling good to feeling bad, so behavioral intervention can help them feel better[5,10].

The experience of cancer treatment is a great challenge to the usual coping strategies of most people and can significantly impact on quality of life. Relaxation therapy, guided imagery and behavioral interventions as well as education have evidence of being beneficial for physical and psychological distress[5,6,7,24].

The adverse effects of chemotherapy as nausea and fatigue, experience heightened emotional distress and interference with physical, social, role functioning and quality of life are well documented as a consequence of receiving chemotherapy[11,23]. It is important to realize that the patient perception of cancer and chemotherapy treatment will influence how the individual reacts and ultimately adapts. Although, teaching may be initiated while the patient is still hospitalized, most teaching regarding chemotherapy take place in the outpatient setting and is provided by the nurse while administer the treatment . It provides support and knowledge to empower the patient to manage self- care effectively. Teaching patients about their treatment reduces fear, increases self confidence, improves compliance and enhances their participation in self care.

Providing nursing care to the patient receiving chemotherapy presents many challenges. Interventions focus on preventing or minimizing side effects caused by the chemotherapeutic agent[12,13,24]. The key is to assess accurately the patient status and to complete a health history to detect risk factors before initiating therapy that provides baseline data. After the patient begins treatment, it is important to assess any changes from the baseline and to evaluate the effectiveness of the interventions implemented. The nurse assessment of patient response to treatment and assistance in preventing or managing side effects can make difference in the patient overall perceived quality of life [14,25,28].

Behavioral intervention with patients undergoing cancer treatment has received wide acceptance from both staff and patients[22]. Behavioral intervention procedures are now among the most widely offered psychosocial

services at comprehensive cancer centers [20,21]. At the World Health Consensus Conference on cancer pain management, behavioral methods were identified as a primary treatment for side effects with undergoing repeated diagnostic and treatment [49]. Similar recommendations have been made by the Agency for Health Care Policy and Research [6,21,49]. Reasons for the broad acceptance of behavioral methods include the following: the immediacy of their positive impact on patient distress and suffering [34,35,36], the relative ease of their application, and the sense of control their use provides patients at a time when they feel most vulnerable [49] .

Hence, the current study was conducted to evaluate the efficacy of a behavioral intervention for reducing the severity of symptoms among patients undergoing a first course of chemotherapy.

1.1 Significance: Chemotherapy is associated with physical and psychological problems had negative effect on life.It is painful for patients to get side-effects and plays a significant role in how cancer patients tolerate treatment**.**

1.2 Aim of the study: Evaluate efficacy of a behavioral intervention for reducing the severity of multiple symptoms among patients of cancer who are undergoing a first course of chemotherapy.

1.3 Research Hypotheses

A significant difference will find between case and control among cancer patients undergoing a first course of chemotherapy.

II. Method

2.1 Research Design: A quasi experimental research design was utilized to achieve the aim of this study.

2.2 Setting: This study was conducted in Cancer Institute at Menoufiya University Hospital

2.3 Subjects: Entry criteria were as follow: patient age from 20 years, of a tumor, undergoing a first course of chemotherapy, nor not be scheduled to receive radiation therapy before the start of chemotherapy cycle. All patients not received intravenous chemotherapy previously, be scheduled to receive a minimum of six cycles of intravenous chemotherapy with a minimum of 7 days between each cycle, not be scheduled to receive radiation therapy before the start of chemotherapy cycle. A convenient sample composed of 119 adult male and female patients, with chemotherapy treatment. Subscale was randomly assigned into two groups. Study and control group (59&60 patients respectively) and diagnosed with cancer**.**

2.4 Tools for data collection: study and collect the necessary data tools were by the researchers based on review of related literature.

2.4.1 A Structured interview questionnaire: it included two main parts: Part1: age, sex, education level and occupation, site of cancer. Part2: Interview questionnaire: it includes the following items: definition of chemotherapy, action of it, methods of chemotherapy and symptoms as verbated by related to chemotherapy side effect.

2.4.2 :M.D.Anderson Symptom Inventory scale [24]**:** (13 symptom severity items: pain, fatigue, nausea, disturbed sleep, distress (emotional), shortness of breath, lack of appetite, dry mouth, and 6 symptom interference items: general activity, mood, relations with other people, and enjoyment of life). Scoring system : On the basis of reviews of previous symptoms scales and our past research, symptoms were included in an index to assess the problems through patients complains and observations regarding the presence of each symptoms during treatment. Zero indicated that a symptom was not present. If patients acknowledged a symptom, they were asked to rate its severity on a 10-point scale ranging from 1 (barely noticeable) to 10 (worst severity possible). For analyses, the severity index was a sum, computed for each patient at each observation across severity reports for all symptoms. **Tools development:** the first tool was constructed by the researchers after reviewing the relevant literature, while the second tool was developed by M.D. Anderson. Tool II was translated into arabic by the researchers .

2.5 Human rights and ethical consideration: Permission to conduct this study was obtained from the hospitals authorities. The researcher approached patients individually at Cancer Institute, explaining the purpose of this study, and the importance of intervention in reducing symptom severity during chemotherapy and then an informed consent was obtained from participants who accepted to participate in the study. The researcher emphasized that participation in this study is entirely voluntary and withdrawal from the study would not affect the care provided, and confidentiality was maintained by keeping privacy of all participants' information.

2.6Validity and Reliability: The developed questionnaires tools were reviewed by 6 panels of experts' medical and nursing field in order to ensure content comprehensiveness, clarity, relevance, and applicability. The test-retest reliability showed a value of 0.86. The second tool was developed by M.D. Anderson were translated from English into Arabic to help the patient understand them**.**

2.7 Pilot study A pilot study was carried out on ten percent from the total sample size to test the feasibility and clarity of the used tools; modifications were done based on the results. Subjects included in the pilot study were excluded from the main study sample.

2.8 Procedure Official written permissions to conduct this study were obtained from the head of Cancer Institute. Subjects which met the criteria were approached by the investigator. At that time, the purpose and nature of the study were explained. This study was conducted according to the following steps: 1st step: Designing the sessions to be implemented through review of related literature and research results regarding behavioral intervention for reducing the multiple symptoms among cancer patients tested for content validity by a jury of 6 experts. The researchers introduced themselves to every participant, explain the purpose of this study and assured them that confidentiality would be maintained throughout the study then a verbal consent was obtained from each participant. 2nd step; the researcher met with the selected patients from previous settings. At the initial visit, data were collected on sociodemographic data pertinent to age, sex and education. Also pre-test related information Anderson Symptom Inventory scale was assessed for each subject (case& control) before exposure to intervention. Data were collected during 6 months from January to June 2013 using interview methods. This study was extended over a period of the interview, each patient was assigned to assure balance between the experimental and control groups. Assigned to the experimental group, interveners established a time during the patient's next visit. Patients who agreed to participate in this study and fulfilling the inclusion criteria were included in the study. 3rd step: Sessions were given to selected patients who had suffered from symptoms of chemotherapy. The subjects of the study were divided into small groups' 7-8patients. Every subjects take one session per 7 to 10 days (the distance between every session). The researcher worked with all subjects 8sessions (8 consecutive sessions' per2 weeks) over 12 weeks (first cycle). And divided the same during second cycle. Every chemotherapy cycle had one session and the distance between every session from10to15 days. All patients were at weeks (midpoint of the intervention) and at weeks (immediately after the intervention) for follow-up interviews. Each session lasted from 30 to 45 minutes for intervention.

Each patient who met the criteria of the sample was interviewed personally and a base line assessment was conducted in a clinical waiting area before the starting of chemotherapy cycle according to chosen criteria. Just before the start of second chemotherapy cycle time, the third chemotherapy cycle time, and the fourth chemotherapy cycle time to assess physical and psychological problems.

The first session was began before start chemotherapy cycle & designed to equipped subjects with necessary basic information related to chemotherapy like as, definition of chemotherapy, action of it, methods of chemotherapy, health problems as pain, fatigue, nausea, disturbed sleep, distress (emotional), shortness of breath, lack of appetite, dry mouth, and vomiting .

The second session was begun after second chemotherapy cycle to assess physical and psychological problems by using Anderson Symptom Inventory scale all participants (study and control group).

The third session was begun after the third chemotherapy cycle. Each patient (study group) received verbal instruction supplemented using a pamphlet as an illustration guide for more clarification to the patients before the specific methods used to reduce aversive side effects of cancer treatment are outlined. Such assessment in the course of the intervention are: 1) before the actual intervention is initiated to determine what resources the patient has to facilitate the intervention, 2) during the period of implementation , must provide feedback to meet the patient's particular needs, and 3) after the intervention is completed to guide follow-up care. Specific methods have been used in behavioral intervention to reduce aversive side effects of chemotherapy, attentional distraction, systematic desensitization, relaxation training beside self-care management for patients. Session began with a review of the common sources and manifestations of chemotherapy patients and a discussion of the use to improve the patients' condition.

1-Attentional distraction: This method is used to control nausea and acute pain/distress. It engaged the patient in highly interesting activities to block his attention during chemotherapy sessions. Effectively blocking occurs of aversive side effects through guided imagery or telling interest story [22,49]**.** Positive effects of distraction, the patient must are actively engaged in the distraction task. That is, symptoms are controlled while the patient's attention is focused on the distraction task.

2-Systematic desensitization: This method is used to alter patients' aversive reactions to stimuli associated with treatment (e.g., anxiety and nausea upon seeing a chemotherapy nurse or drugs). Gradually exposure feared stimuli, beginning with the least feared stimuli and progressing to the most feared (like as explain procedure of chemotherapy and its positive effect). This exposure is carried out across individual sessions with the patient calm and relaxed. its application to control a life-threatening following successful in a female patient [42,49].

3-Relaxation training: The goal of relaxation training is to teach the patient how to establish a state of deep relaxation, which has been shown to reduce pain [35,41] and facilitate distraction [36,37,38], and it was followed by an active relaxation exercise. The exercise combined abbreviated progressive muscle relaxation training with the use of relaxing mental imagery. Patients were directed to repeatedly tense and relax a standard set of muscle groups, after which they were assisted in visualizing a tranquil nature scene to enhance and sustain feelings of relaxation. Patient learns to focus on smoothing images, to tense and release muscles, and/or to breathe deeply. With practice, the patient is able to control his/her level of relaxation and to go quickly into a state of deep relaxation. [44].

4-Modeling: This method involves the use of demonstrations of successful coping (another case like the patient completed his treatment and recovery) during invasive treatment procedures to teach behavioral coping skills. It is most commonly used to describes thoughts and feelings that he/she often experiences and then demonstrates behavioral coping skills manage his/her fear and distress [40,43].

Statistical Analysis:

Data was collected, tabulated and statistically analyzed with SPSS statistical package version (16). Two types of statistics were done:

1-Descriptive such as number, percentage, mean and standard deviation.

2-Analytical:

a- Test for comparison between two groups with quantitative data.

b-Paired T test to study effectiveness of methods of treatment before and after one group.

c-Chi square test for comparison of qualitative data between two or more groups.

P value was considered significant if less than 5%

III. Results :

Table (1) revealed that above two fifth (40.6%) of the study group were in age group 50->60 years. The result also showed that both study and control groups were female (59.3% and 63.3%) with no significance difference. In relation to education above half (52.5%) were illiterate of study group while below half (46.7%) were read and write of control group with significant difference. More ever the large percentage (55.9%) of study group had no work while equal percent (33.3%) for control group had no work and manual work. In relation to cancer site the large percent (55.99%) of study group had colon cancer while (38.9% and 36.7%) of control group had colon and other types of cancer.

Table (2) showed that physical and psychological symptoms, both study and control group about physical and psychological symptoms as verbated by them related to chemotherapy side effect before intervention sessions show that highly percent of both group complain of insomnia, pain and fatigue (96.7%,93.3% and 96.7%). In relation to psychological symptoms highly percent for both study and control group had emotional distress (93.3% and 92.2%).

Table (3) revealed that baseline symptoms severity, in study group all symptoms reached threshold for selected symptoms. After 3 sessions of intervention mean of sample 13.9±10.27 but after 6 sessions of intervention the mean were 11.2±9.1.

Table (4) revealed that relations with other people, and enjoyment of life. Were improved from (63.3% at third session had effect to 83.3% at sixth session had no effect) as compared to control group (56.7% at first assessment had effect and progress to 76.7% at third assessment).

Table (5) showed that Percent distribution of the study group during sessions of management according to symptom severity during chemotherapy in relation to their sex, age and occupation. The male cases had relieved intervention faster than female at third session of management (33.3% and 76.7%) respectively. While the majority (76.7%) of cases among age group (50 - > 60) and no worked had slowly of relieving intervention.

IV. Discussion:

Behavioral intervention is recognized as key in the overall effort in cancer prevention and control. It is also important to appreciate the fact that the impact of behavioral intervention to reduce treatment side effects. Is generally accepted as having a positive impact both physical and mental health, patients report feeling better and often report fewer disease related symptoms when under control [2]. In addition to such common side effects as nausea and fatigue, many patients experience heightened emotional distress & interference with physical, social and role functioning [1,19]. Nausea and vomiting and emotional distress in the period before chemotherapy administration [1,22].

Findings this study revealed that, the prevalence of physical and psychological symptoms among both is studied. And control groups were considered a relatively high. Over half of all chemotherapy patients experience nausea and vomiting as a result of their treatment had impact on quality of life [1,10,22].

Insomnia is a prevalent form of sleep difficulty which can affect all of the population, decreasing work potential and increasing health care utilization [43]. Current study demonstrates vast majority of both study & control groups had disturbance in their sleep pattern over the past weeks through three assessment sessions this may be due to side effect of chemotherapy on patients may be factors increasing insomnia. This result is supported by other studies. Given, et al (2004), reported that 71% of chemotherapy patients experienced insomnia (1). Also, Collingwood & Elliott (2006) reported (53.75%) of cases experienced insomnia (44). Positive results have been obtained with adult patients, for example, Edinger & Moynihan (2005) & Winkelman, et al., (2005) estimated that highly significant in sleep difficulty which cause irritability, depression and fatigue [43,44].

The vast majority of study and control group with the present study were pain and fatigue. Jacobsen (2002) was supported this study, which reported fatigue can be debilitating in many patients [47]. Fatigue has been seen as one of the most common symptoms experienced by patients and associated with significant impairment in functioning and overall quality of life [52]. Other researches supported the results of this study, like as Given, et al., (2004) reported 50% of cases were suffering from pain after taken chemotherapy [1]. Also, others estimated that highly significance in pain after taken chemotherapy [41] . The main psychological problems or symptoms of this study were inability to concentrate and difficulty remembering, emotional distress and disturbed relation with other people and enjoyment of life. All cases of the current study had experienced psychological problems which related to chemotherapy and its physical problems. These psychological problems had affected patients. Similar positive results supported this study like as Given, et al., (2004) reported highly significance of emotional distress [1].Many patients experience heightened emotional distress which was affected on their life [54,56]. In addition, Cohen in Stuyck (2005) examining the effects of stress management therapy strategies for managing and having realistic expectations of recovery. The research was evaluating reduction program affected patients psychological well being and physiological factors [55].

The current study found that patients who received behavioral intervention types for patients before start of each chemotherapy cycle experienced less physical and psychological symptoms as (nausea, vomiting, fatigue, pain and emotional distress) that results from on patients than control group. Other studies had similar results, Lerman, et al., (2004) found that patients who received relaxation training and brief orientation to treatment before starting of chemotherapy experienced less nausea compared to control condition (1). Walker, et al (2004) found that patients who received training in relaxation & guided imagery before the start of chemotherapy reported less psychological distress than patients in a standard treatment control condition [1]. Also, relaxation training and guided imagery are used to control pain and had beneficial effects on pain. Seven studies, incorporating variety of designs, found a reduction in pain following the same management [49].

The present study showed that the male cases were faster (able) to improve than female. This result supported by others who reported that Women's intervention was increased by the fact that they worried more about how their side effect prevented them from fulfilling their family responsibilities 41% versus 19% of men [49]. Also, older age cases were slowly in relieving pain& distress than younger age cases which can affect on their relation.

V. Conclusion and Recommendations

Compared with conventional care alone, the experimental intervention was effective among patients who entered the trial with higher levels of symptom severity.

Based on the findings the following recommendations can be suggested:

1. Behavioral Intervention has been beneficial for symptom control, decrease symptoms severity
2. Patient undergoing chemotherapy for cancer should have a standardized protocol of care including Behavioral Intervention before and during chemotherapy treatment.
3. Nurses can be trained to apply Behavioral Intervention for chemotherapy patients.

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Table (1): Percent distribution of Sociodemographic characteristics for both the study & control groups.

Sociodemographic Characters	Case		Control		P. value
	No	%	No	%	
Age					
20 –	21	35.6	16	26.7	0.44
30 –	6	10.2	10	16.7	**P**>0.05
40 –	6	10.2	8	13.3	
50 –	24	40.6	16	26.7	
60 & more	2	3.4	10	16.7	
Mean =	39.733		42.800		
S.D.	14.163		16.653		
Sex					0.759
Male	24	40.7	22	36.7	**P** >0.05
Female	35	59.3	37	63.3	
Education					
Illiterate	31	52.5	22	36.7	0.061
Read & write	20	33.9	28	46.7	**P** <0.05
Educated	8	13.6	10	16.7	

Occupation					
No-work	33	55.9	20	33.3	0.001
Manual	14	23.7	20	33.3	**P** <0.05
Technical	4	6.8	8	13.3	
House wife	8	13.6	12	20.0	
Cancer site					
Colon	33	55.9	23	38.9	0.000
Lung	22	37.3	15	24.4	**P** <0.05
Other type	4	6.8	22	36.7	
Total	59	100.0	60	100.0	

Table (2): Percent distribution for both study and control groups about physical and psychological symptoms as verbated by them related to chemotherapy side effect before intervention sessions.

Physical and Psychological symptoms	Before intervention			
	Study		Control	
	No	%	No	%
Physical symptoms:				
Loss of appetite	4	6.7	4	6.7
GIT (nausea, vomiting, diarrhea and colic)	30	50.8	26	43.3
Sleep pattern disturbance	57	96.6	58	96.7
Pain after administration of chemotherapy	55	93.2	56	93.3
Fatigue	57	96.6	58	96.7
Mouth sores	22	37.3	18	30.0
Shortness of breath	4	6.8	2	4.4
Psychological symptoms:				
Inability to concentrate	8	13.6	6	10.0
Emotional distress	55	93.2	55	93.2
Quality of life	33	37.3	26	43.3

Every one has more than one side effect or symptoms.

Table (3): Mean and SDs for Symptom severity and Number of Symptoms at the 3 & 6 sessions Intervention.

.	After 3 sessions						After 6 sessions					
	Study			Control			Study			Control		
	No of patient	Mean	S.D	No of patient	Mean	S.D	No of patient	Mean	S.D	No of patient	Mean	S.D
Symptom severity	59	13.9	10.27	60	18.25	11.86	59	11.19	9.09	60	20.41	13.03
No of Symptom	59	2.97	1.65	60	4.33	1.97	59	2.39	1.39	60	4.134	2.136

Abbreviation: SD. standard deviation

Table (4): Percent distribution for both study and control groups about effect of chemotherapy on patient's Life style before and after intervention sessions.

	Study (session of management)						Control (session of assessment)					
	Before session		After 3 session		After 6 session		Before session		After 3 session		After 6 session	
	No	%	No	%	No	%	No	%	No	%	No	%
Effect of chemotherapy on patient's Life style												
Had effect	37	63.3	26	43.3	10	16.7	34	56.7	44	73.3	51	85.0
Had no effect	22	36.7	33	56.7	49	83.3	26	43.3	16	26.7	9	15.0
Total	59	100	59	100	59	100	60	100	60	100	60	100

Table (5): Percent distribution of the study group during sessions of management according to symptom severity during chemotherapy in relation to their sex, age and occupation.

Biosocial characteristics	symptom severity during chemotherapy						P. value
	Before Session		After 3 Sessions		After 6 Sessions		
	No	%	No	%	No	%	
Sex							$X^2 = 0.4036$
Male	26	44.1	14	42.3	6	40.0	P = 5.99
Female	33	55.9	20	57.7	9	60.0	**P** <0.05
Age							
20 –	21	35.6	9	34.6	0	0.0	$X^2 = 3.8119$
30 –	6	10.2	2	7.7	3	20.0	P = 15. 507
40 –	6	10.2	2	7.7	2	13.3	**P** < 0.05
50 –	24	40.6	12	46	6	40.0	
60 -	2	3.4	1	4	4	26.7	
Occupation							
No work	33	55.9	16	61.5	6	40.0	$X^2 = 58.9$
Manual	14	23.7	7	27	3	20.0	P = 12.592
Technical	4	6.8	1	4	2	13.3	**P** <0.05
House wife	8	13.6	2	7.5	4	26.7	
Total	59	100.0	34	100.0	15	100.0	

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