

Preoperative Concurrent Chemo-radiotherapy in Rectal Cancer: Outcomes of Two Teaching Methods on Patients` Awareness

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Abstract:

Aim : This study aimed to evaluate the outcomes of two teaching methods on awareness of patients` with rectal cancer undergoing preoperative concurrent chemoradiotherapy .

Methods: A prospective quasi-experimental design was used for the conduction of this study in the Surgical Outpatients` Clinics and Oncology Department at Ain Shams and Tanta Universities Hospitals. A purposive **sample** composed of 160 adult and old age curative patients from both sexes with rectal cancer undergoing preoperative concurrent chemoradiotherapy were recruited from the above mentioned settings. **Tools :** 1) Patients' interviewing questionnaire (pre/post tests) to assess studied patients` knowledge about concurrent chemoradiotherapy .2) Patients' anxiety concerns assessment sheet (pre test) . 3) An observation checklist (pre/post tests) to evaluate studied patients` practices as regards concurrent chemoradiotherapy (pre/post tests) . (4) Patients' condition assessment (during and post treatment protocol) : It included , Numerical Rating Pain Scale , Beck Anxiety Inventory , Fatigue Severity Scale and Self-Report Weekly Diary . **Results:** There were statistical significant differences between pre/post tests as regards the effects of two teaching methods on studied patients` awareness (knowledge and practices) , whereas more improvement was noticed in post tests , added to an obvious improvement in patients` health condition post treatment protocol . **Conclusion :** The two teaching methods(educational program and instructional booklet) were helpful on improving awareness of patients with rectal cancer undergoing preoperative concurrent chemoradiotherapy and the educational program method was more better and assistance . Moreover, significant reduction on fatigue and pain levels added to treatment side effects among the studied patients. **Recommendations:** Further studies should be carried out on a large number of patients with preoperative concurrent chemoradiotherapy for evidence of the results and generalization.

Key words: Rectal cancer - Preoperative concurrent chemoradiotherapy - Teaching methods - Awareness

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I. Introduction

Colorectal cancer is the fourth most common cancer worldwide . It continues to be one of the most common human malignancies that affect nearly one million individuals' worldwide every year. The disease can be considered endemic in all western and industrialized countries . Administration of chemoradiation before tumor resection has revolutionized the management of locally advanced rectal cancer . Preoperative concurrent chemoradiotherapy (CRT) have become the standard treatment for locally advanced middle and low rectal cancer (resectable stage II ~ III patients) to improve the local control rate and long-term survival rate . The loco-regional recurrence rate of resectable stage II ~ III rectal cancer patients was 15% to 65%. Even with the total mesorectal excision , local regional recurrence rate of stage III patients is up to about 20% ~ 30% ^(1,2) .

Concurrent chemoradiotherapy can reduce the tumor mass, block tumor invasion, increase tumor resection rate, and anus retention rate, reduce iatrogenic dissemination during operation and reduce the local recurrence rate. Preoperative 5-fluorouracil (5-FU) and radiotherapy followed by total mesorectal excision (and postoperative adjuvant 5-FU) became a standard treatment for locally advanced rectal tumors at least in Europe. As infusion 5-FU needs to be administered as a continuous infusion during radiation, clinically more convenient, tolerable, and efficient agents were developed in recent years, such as oral bioavailable fluoropyrimidines, e. g., capecitabine (Xeloda) ^(3,4) .

Moreover, in radiotherapy all patients received radiotherapy 5 days a week for 5 consecutive weeks. In chemotherapy, capecitabine was administered at a dose of 825 mg/m² twice daily on radiation days from week 1 to 4. oxaliplatin, at a dose of 50 mg/m², was applied intravenously as a 2 h infusion on days 1, 8, 15,

and 22 prior to radiation therapy. In surgery, 4–6 weeks after completion of chemoradiation. Preferred types of radical resection, according to standardized technique, were low anterior resection (LAR), intersphincteric resection, or abdominoperineal excision (APE); all accompanied with total mesorectal excision (TME). The most important prognostic factor for overall survival rate is the pathologic extent of disease, lymphatic and vascular invasion, pathologic type, circumferential resection margin and degree of lymph node dissection. Downstage effect of neoadjuvant radiochemotherapy (nCRT) is also considered as a risk factor^(5,6).

National Cancer Comprehensive Network (NCCN) guidelines have adopted preoperative chemoradiotherapy as the standard management for locally advanced rectal cancer (LARC; stage II or III) which consists of preoperative chemoradiotherapy, radical transabdominal surgery, and postoperative chemotherapy. This multimodal combined treatment plan has significantly improved disease control and patient survival, but has inevitably been accompanied by an increase in morbidities and functional deterioration. As well as, careful consideration of primary tumor, regional lymph node and distance metastasis will improve the survival of rectal cancer with the selection of appropriate treatment. In addition, different therapeutic reactions to neoadjuvant chemoradiotherapy affect the type of surgical techniques, hence calling for the need of much attention. Furthermore, many problems such as accurate staging before surgery, selection of suitable neoadjuvant chemoradiotherapy method, and sensitivity prediction to preoperative radiotherapy need to be well settled^(7,8).

Patient education is necessary to develop the attitudes that influence positive health behaviors, understanding the rationale of taking medications, correlates with the degree of compliance, severity of disease and complexity of treatment regimens. Patients should be aware of their disease process and potential treatment options through education. Patients come from different ethnic and socioeconomic backgrounds and they have different treatment priorities. It's important to have an open discussion with patients and know their expectations and needs^(9,10).

Significance of the study:

Colorectal cancer is the fourth most common form of malignancy worldwide with an estimated 800,000 new cases being diagnosed each year. Colorectal cancer accounts for about 10% of all cancers. Although the incidence of colorectal cancer has been decreased since 2000 in the United States, the incidence of colorectal cancer is still increasing in Asian countries^(5,11). In Egypt, rectal cancer accounts for 2% to 6% of total cancer incidence among men than women with a ratio of 3:1. In addition, 30% of rectal cancer occurs at young age below 45 yrs. Most patients consult the physician late which diminishes treatment chances and this underlines the importance of associated risk factors as well as regular screening. The number of patients diagnosed rectal cancer disease and admitted to the Radiotherapy and Nuclear Medicine Departments at Ain Shams and Tanta Universities was (560 & 430 respectively) patients during the years 2016-2017, Egypt.

Treatment of locally advanced rectal cancer can have such a comprehensive impact on patient's quality of life, so it is important to determine it for the following reasons: assess quality of survival, improve patient and physician communication, assess chronic or delayed treatment-related problems, disease prognostication, educate patients as to what expect during radiotherapy and following surgery and prepare them for the significant changes that may occur^(3,12).

Aim of the Study:

This study aimed to evaluate the outcomes of two teaching methods on awareness of patients with rectal cancer undergoing preoperative concurrent chemoradiotherapy. This aim was achieved through the following:

- Assess studied patients' knowledge and practices as regards preoperative concurrent chemoradiotherapy for rectal cancer
- Develop and implement educational program and instructional booklet for studied patient's with rectal cancer undergoing preoperative concurrent chemoradiotherapy protocol
- Evaluate their effect on patients' awareness and health condition

Hypothesis:

It was hypothesized that there is a difference between the effects of two teaching methods on improving awareness of patients with rectal cancer undergoing preoperative concurrent chemoradiotherapy.

Operational definitions:

- Awareness: means patients knowledge and practices
- Outcome: means positive effect on patients' knowledge and practices, reduction on the severity of side-effects and increase the adherence to treatment.
- Patients undergoing pre-operative concurrent chemoradiotherapy: means period of patients' diagnosis, chemoradiotherapy sessions and two months rest post treatment then re evaluation).

- Curative patients : included those who were undergoing preoperative concurrent chemoradiotherapy plus surgery.
- Pre test = before giving the two teaching methods
- Post test = immediately after completion of the two teaching methods
- Follow up tests = post completion of the treatment sessions
- During and post treatment protocol : means on first time of treatment (pre test) , after one month (post- test) and then after one month later (follow – up test)

Subjects and Methods:

Design:

A prospective quasi-experimental design was used for the conduction of this study

Setting:

The study was conducted in Surgical Outpatients` Clinics and Oncology Department (Radiotherapy and Nuclear Medicine) at Ain Shams and Tanta Universities Hospitals.

Subjects:

A purposive sample composed of 160 adult and old age curative patients from both sexes with rectal cancer undergoing preoperative concurrent chemoradiotherapy were recruited from the above mentioned settings. They were selected according to the sensitive analysis in relation to rectal cancer. The subjects were taken as follows:

Ain Shams Hospital (80 patients)

Tanta Hospital (80 patients)

Inclusion criteria:

- Patients with rectal cancer on II and III stage of the disease.
- Patients with primary tumor (from outpatients' clinics).
- Patients who agreed to participate in the study and to complete the treatment sessions .
- All patients receiving the same treatment protocol.
- Conscious adult patients without co-morbid conditions.

Tools of data collection:

I. Patients` interviewing questionnaire (pre / post and follow up tests) :

It was designed by the researchers in light of the relevant and related literatures and written in simple Arabic language to assess knowledge of patients with rectal cancer undergoing preoperative concurrent chemoradiotherapy . It included the following parts:-

- ❖ **Patients` characteristics:** It included age, gender, and occupation, level of education, income, marital status and smoking habits.
- ❖ **Patients' medical records:** It was used to obtain patients' diagnosis, stage of the disease, past and present history, treatment duration, investigations and treatment pattern.
- ❖ **Patients` knowledge assessment sheet** : It included 1) rectal cancer : definition , causes , signs and symptoms , diagnostic measures , disease stages , complications and surgical management . 2) Concurrent chemoradiotherapy : definition , objective , side effects , hygienic measures , therapeutic diet , activities of daily living , regular follow – up and immediate doctor calling .

Scoring system:

Responses of the studied Patients' were scored as (1) for correct answer and (zero) for incorrect answer. The total score was categorized into either satisfactory level (from 60% and more) or unsatisfactory level (less than 60%).

II- Patients' anxiety concerns assessment sheet (Pre test) : It was developed by the researchers in light of the relevant and related literatures ^(12, 13) to evaluate studied patients concerns as regards : Lack of awareness , pain severity , physical side- effects , patients / family burden , recurrence / metastasis , deformity and difficult to cope .

III- An observation checklist (pre / post and follow- up tests):

It was adopted from (Dewit et al., , 2016 & Lewis et al. , 2014, Chen et al., , 2016) ⁽¹²⁻¹⁴⁾ , developed and filled by the researchers to evaluate studied patients' practice in relation to rectal cancer and chemoradiotherapy (Bathing / hygienic measures, exercises technique , skin care methods , infection control measures , preparation for diagnostic measures , pre chemoradiotherapy protocol and pre surgery

A correct practice was scored as (1) while the incorrect (zero). It was scored into either inadequately done (less than 70%) or adequately done (70% and more).The total score was categorized as satisfactory = 70 – 100, or unsatisfactory = less than 70.

IV- Patients' condition assessment (During and post treatment protocol)

N.B : During and post treatment protocol : means on first time of treatment , after one month and then after one month later .

❖ **Numerical Rating Pain Scale:** It was based on **Krebs et al. (2010)** ⁽¹⁵⁾ and used to determine patients' pain intensity before and after treatment sessions. The scale ranged from 0-10. According to patients' responses, the following classification was adopted: 0 (none), 1-3 (mild), 4-6 (moderate) and 7-10 (severe).

❖ **Beck Anxiety Inventory (BAI)** : It was developed by **Beck et al. (1988)** ⁽¹⁶⁾ and modified by the researchers. This scale formed of 21 variables : numbness or tingling , welling hot , wobbliness in legs , unable to relax , fear of worst happening , dizzy or lightheaded , heart pounding / racing , unsteady terrified or afraid , nervous , feeling of choking , hands trembling , shaky / unsteady , fear of losing control , difficulty in breathing , fear of dying , scared , indigestion , faint / lightheaded , face flushed and hot / cold sweats .

The total score is calculated by finding the sum of the 21 items. Score of 0-21 = mild anxiety. Score of 22-35 = moderate anxiety . Score of 36 and above = sever anxiety

. Testing reliability of the scale items using alpha Cronbach test = 0.92.

❖ **Fatigue Severity Scale:** It was adapted from **Krupp (1989)** ⁽¹⁷⁾ , **Janaki et al. (2010)** ⁽¹⁸⁾ to measure fatigue level and consisted of nine statements with score ranged from 1-5, however 1 indicates strongly disagree (low fatigue level) and 5 indicates strongly agree (high fatigue level). The total score was ranged from 9 – 45, however mild fatigue (13.5 - 22.5), moderate fatigue (23-31.5) and severe fatigue (more than 31.5 - 45).

Testing reliability of the scale items using alpha cronbach test = 0.95.

❖ **Self-Report Weekly (5 days) Diary :** It was designed by the researcher to assess side effects reduction and completed at the same time of chemoradiotherapy assessment to identify patient's complaints such as : skin / bleeding problems , nausea, vomiting, constipation , diarrhea, abdominal pain, loss of appetite, fatigue , anxiety and depression etc. . In addition, the solutions that have been already done as well as medications taken . This report was helpful in the assessment of patient's condition and prevents further complications.

Content validity:

It was ascertained by a group of experts including staff of: Oncology, General Surgery, and Medical - Surgical Nursing. Their opinions were elicited regarding to the tools format layout, consistency and scoring system. The tools were tested regarding to the knowledge accuracy, relevance and competence.

Ethical considerations:

In the planning stage, approval was obtained from Director of Radiotherapy and Nuclear Medicine Department and Surgical Hospital at Ain Shams and Tanta Universities Hospitals .

. The studied patients were informed about the procedure and their rights according to medical research ethics to withdraw from the study at any time, then, written informed consent was obtained from them.

d) Pilot study:

A pilot trial was carried out on 10% of the total study sample to test the clarity and practicability of the tools, in addition to subjects and settings. Pilot subjects were later included in the study as there were no radical modifications in the study tools .

e) Procedure of the study :

- Sampling was started and completed within 10 months
- Purpose of the study was simply explained to patients who agreed to participate in the study prior to any data collection.
- Number of treatment sessions were determined by the physician
- The researchers starts to collect data from patients two times :
 - On the same day of diagnosis (Surgical Outpatients` Clinics).
 - On the same day of scheduling for the treatment sessions tools (Chemoradiotherapy Outpatients` Clinics).
- Filling in the tools was done according to patients' understanding and health condition.
- The instructional booklet and educational program were designed based on analysis of the actual educational patients' needs assessment in pre test by using the pre constructed tools.
- The content was written in simple Arabic language, consistent with the related literature , met patients' needs and their level of understanding.

- The instructional booklet :
 - It consisted of different elements: Theoretical part included definition of chemoradiotherapy , indications, complications, instructions before, during and after sessions of treatment, safety measures , physical preparations , pain ,anxiety and fatigue relieve , diet and activities of daily living . Practices part included , bathing / hygienic measures, exercises technique , skin care methods , infection control measures , preparation for diagnostic measures , pre radiotherapy sessions and pre surgery .
 - It was distributed to each studied patient at first time after filling the pre assessment tools by the researchers with orientation about its contents and purposes.

- The educational program :
 - It presented in theoretical and practical sessions.
 - Sample was divided into small groups including 5 -6 patients, each group obtained 4 sessions (2 theory and 2 practice).
 - The theoretical part was conducted through lectures and group discussion using data show as a media and an educational pamphlet . It was taken in 2 sessions (each session for 45 minutes)
 - The practical part was conducted through demonstration, re-demonstration and video. It was taken in two sessions (each session for 60 minutes)and covers the following items
- The researchers contact the patients 2 days weekly for data collection and any explanation. They also informed to be in contact with the researchers by telephone for any guidance.
- Patients were assessed either individually or in groups that entail 5-6, according to their physical and mental readiness.
- Patients were informed to be in contact with the researchers by telephone for any guidance.
- A self-report 5 day diary was completed weekly at the same time of assessment for every patient in the Outpatients `Clinics .
- Evaluating the effect of two teaching methods on the studied patients was done as follows :
 - Patients` knowledge and practices through :
 - Pre test = before giving the two teaching methods
 - Post test = immediately after completion of the two teaching methods
 - Follow up tests = post completion of the radiotherapy sessions .
 - Patients` anxiety concerns through pre test : before giving the two teaching methods
 - Patients` condition assessment was done through the assessment of pain , anxiety , fatigue levels and self report 5 days diary through tests during (first time of treatment sessions and then after one month) and after termination of treatment sessions by one month later) .

Statistical Design:

The collected data were organized, categorized, tabulated and analyzed using the Statistical Package for Social Sciences (SPSS). Data were presented in tables and charts using numbers, percentages, means and standard deviations, t-test. Level of significance was threshold at 0.05.

II. Results

Table (1): Shows characteristics of the studied patients. More than half of the studied patients had the age of 40 yrs and more in Ain Shams and Tanta University Hospitals (61.3 & 58.8 respectively) . Concerning gender, marital status , job and smoking , results revealed that married , unemployed , not smoking male patients with second degree of the disease were higher in Ain Shams than Tanta University Hospitals .

Table (2): Reveals studied patients` anxiety concerns pre treatment protocol among both study Hospitals . Insignificant difference was found between patients at Ain Shams and Tanta University Hospitals (mean = 69.1 ± 12.5 & 69.1 ± 13.9 respectively) .

Table (3): Clarifies satisfactory knowledge about rectal cancer and chemoradiotherapy care in pre/post tests among both groups of the study . Results revealed significant differences between patients` knowledge in pre/ post tests , whereas , more improvement was noticed in post and follow- up tests . In addition, G1 had the higher percent compared to G2 ($t = 11.7$ & 12.7 respectively , $p < 0.05$) .

Table (4): Clarifies satisfactory practices as regards rectal cancer and chemoradiotherapy care in pre/post tests among both groups of the study . Results revealed significant differences between patients` knowledge in pre/ post tests , whereas , more improvement was noticed in post and follow –up tests . In addition, G1 had the higher percent compared to G2 ($t = 7.5$ & 7.6 respectively , $p < 0.05$) .

Table (5): Reveals studied patients' pain, anxiety and fatigue levels in pre/post tests . As noticed, significant improvement was indicated among both groups of the study in post and follow – up tests compared to pre . In addition, G1 had the higher percent of progress compared to G2 .

Table (6): Reveals patients' side effects during and post treatment protocol. Results revealed significant reduction on mean percent of side- effects among G1 and G2 after one month of treatment (mean = 43.6±10.4 & 48.5±10.7 respectively with t= 3.0) and after one month later (mean =20.5±4.7& 23.4±5.2 respectively with t= 3.7) . Furthermore, insignificant difference was found between G1 and G2 of patients as regards side - effects on first time of treatment (mean = 80.4± 8.9 & 80.2± 8.1 respectively), t= 0.14 , p > 0.05 .

Table (7): Presents two teaching methods effects on patients' satisfactory knowledge and practices in pre/post tests. Results revealed significant difference , whereas more improvement was noticed in post and follow-up tests among studied patients having educational program (G1) and instructional booklet (G2) . In addition, group of educational program had the higher mean in their knowledge and practices compared to another group .

Table (1): Characteristics of the studied patients (n = 160)

Items	Studied Patients			
	Ain Shams University Hospitals(80)		Tanta University Hospitals(80)	
	No	%	No	%
Age				
20 -< 40	31	38.7	33	41.2
40 & more	49	61.3	47	58.8
Gender				
Male	48	60.0	46	57.5
Female	32	40.0	34	42.5
Marital status				
Single	18	22.5	22	27.5
Married	62	77.5	58	72.5
Education				
Illiterate / Primary	44	52.5	43	53.7
Secondary	21	26.3	19	23.8
University	17	21.2	18	22.5
Job				
Employed	28	35.0	31	38.7
Unemployed	52	65.0	49	61.3
Disease stage				
II	45	56.3	42	52.5
III	35	43.7	38	47.5
Smoking				
Present	30	37.5	34	42.5
Not present	50	62.5	46	57.5

Table (2): Presentation of anxiety concerns among studied patients pre chemoradiotherapy protocol

Anxiety concerns	Studied patients (n=160)			
	Ain Shams University Hospitals(80)		Tanta University Hospitals(80)	
	N0	%	N0	%
Lack of awareness	62	77.5	66	82.5
Pain severity	68	85.0	69	86.3
Physical side- effects	53	66.3	55	68.7
Patients / family burden	56	70.0	51	63.7
Recurrence / metastasis	63	78.7	60	75.0
Deformity	44	55.0	36	45.0
Difficult to cope	41	51.3	50	62.5
Mean % ± SD	69.1±12.5		69.1 ±13.9	

- Patients` anxiety concerns through pre test : before giving the teaching methods

Table (3): Presentation of satisfactory knowledge in pre/posttests about care of patients undergoing chemoradiotherapy (n= 160)

Items	Studied Patients = 160					
	Pre- test		Post- test		Follow- up	
	G1 = 80 %	G2 = 80 %	G1 = 80 %	G2 =80 %	G1 =80 %	G2 =80 %
Rectal cancer						
- Definition	14.0	13.0	70.0	63.8	82.5	75.0
- Signs and symptoms	13.0	14.0	65.0	60.0	76.3	70.0
- Diagnostic measures	36.3	37.5	75.0	68.0	87.5	80.0
- Disease stages	22.5	21.3	77.5	68.8	85.0	75.0
- Complications	13.0	14.0	80.0	75.0	90.0	83.8
- Surgical management	25.0	23.8	72.5	63.8	85.0	80.0
II. Chemoradiotherapy						
- Definition / Objectives	17.5	16.3	75.0	70.0	83.8	78.7
- Side effects	11.3	13.0	77.5	68.8	86.3	80.0
- Hygienic measures	15.0	16.3	72.5	66.3	83.8	77.5
- Therapeutic diet	22.5	23.8	78.8	72.5	90.0	82.5
- Activities of daily living	14.0	15.0	79.3	70.0	88.7	80.0
- Regular follow - up	22.5	21.3	72.5	63.8	82.5	75.0
- Immediate doctor calling	13.0	15.0	75.0	67.5	85.0	79.3
Mean % ± SD	19.1±7.1	19.2±6.7	74.9±4.1	67.5± 3.9	85.5±3.8	78.1 ±3.6
T-value	t = 0.09 Insignificant		t = 11.7 Significant		t = 12.7 Significant	

N.B : G1 (80 patients) = Educational program G2 (80 patients) = Instructional booklet
 *Significant at $p < 0.05$
 Pre- test = before giving teaching methods - Post - test = immediately after completion of teaching methods - follow- up tests = post completion of the treatment protocol

Table (4): Presentation of satisfactory practices in pre/post tests as regards care of patients undergoing chemoradiotherapy (n= 160)

Items	Studied Patients = 160					
	Pre- test		Post- test		Follow- up	
	G1 = 80 %	G2 = 80 %	G1 = 80 %	G2 =80 %	G1 =80 %	G2 =80 %
Bathing / Hygienic measures	36.3	37.5	62.5	57.5	75.0	70.0
- Exercises technique	22.5	21.3	65.0	56.3	77.5	68.8
- Skin care measures	17.5	16.3	60.0	50.0	72.5	63.8
- Preparations for diagnostic procedures	13.0	15.0	67.5	63.8	80.0	75.0
- Infection control measures	11.3	13.0	57.5	50.0	70.0	63.8
- Physical preparations pre radiotherapy	15.0	16.3	52.5	51.3	65.0	60.0
Surgical preparations	22.5	23.8	66.3	58.8	78.8	72.5
Mean % ± SD	19.7 ± 8.5	20.4±8.4	61.6 ± 5.3	55.4 ± 5.2	74.1 ±5.3	67.7 ±5.4
T-value	t = 0.52 Insignificant		t = 7.5 Significant		t = 7.6 Significant	

Pre- test = before giving teaching methods - Post - test = immediately after completion of teaching methods . follow- up tests = post completion of the treatment protocol

Table (5): Presentation of pain and fatigue levels among the studied patients during and after treatment protocol (n=160)

Items	Studied Patients =160					
	On first time (pre test) %		After one month (post - test) %		After one month later (follow – up) %	
	G1 = 80	G2 = 80	G1 = 80	G2 =80	G1 =80	G2 =80
Pain Level						
Mild	13.0	14.0	22.8	17.4	60.1	55.0
Moderate	17.6	15.7	56.9	51.5	31.6	26.5
Sever	68.4	70.3	20.3	31.1	8.3	18.5
Anxiety Level						
Mild	9.0	11.0	27.0	22.0	80.0	70.0
Moderate	12.0	13.2	60.0	58.5	15.0	20.0
Sever	79.0	8.75	13.0	19.5	5.0	10.0
Fatigue Level						
Mild	4.5	5.7	13.0	10.0	25.0	20.0
Moderate	16.2	14.2	37.0	30.0	30.5	25.7
Sever	79.3	1.80	50.0	60.0	44.5	3.54

N.B : During and after treatment sessions : means on first time of treatment (pre test) , after one month (post- test) and then after one month later (follow – up test) .

Table 6: Presentation of side effects during and post treatment protocol among the studied patients

Items	Studied Patients =160					
	On first time (pre test) %		After one month (post - test) %		After one month later (follow – up) %	
	G1 = 80	G2 = 80	G1 = 80	G2 =80	G1 =80	G2 =80
- Skin problems	75.0	77.0	43.8	47.5	15.0	17.5
- Bleeding problems	65.0	62.5	28.7	32.5	13.8	15.0
- Fatigue	85.0	87.5	57.5	60.0	26.3	30.1
- Appetite Loss	81.3	78.8	43.8	47.5	25.0	28.8
- Physical exertion	85.0	82.5	40.1	43.8	17.5	21.3
- Sleep disturbance	67.5	73.8	37.5	41.3	21.3	25.0
- Anxiety / depression	83.8	86.3	65.0	70.0	23.8	26.3
- Abdominal pain	95.0	91.3	42.5	46.3	18.7	20.0
- Diarrhea / constipation	81.3	80.0	40.0	43.8	26.3	28.8
- Nausea /vomiting	85.0	82.5	37.5	45.0	17.5	21.3
Mean % ± SD	80.4± 8.9	80.2± 8.1	43.6±10.4	48.5±10.7	20.5±4.7	23.4±5.2
T-value	t =0.14 Insignificant		t= 3.0 Significant		t= 3.7 Significant	

N.B : During and after treatment sessions : means on first time of treatment (pre test) , after one month (post- test) and then after one month later (follow – up test) .

Table 7: Presentation of two teaching methods effect on awareness (satisfactory knowledge and practices) of the studied patients in pre/post tests

Items	Group I (n=80) Educational program		Group II (n=80) Instructional Booklet	
	Knowledge %	Practices %	Knowledge %	Practices %
Pre – test	17.0	14.0	16.0	12.2
Post – test	78.0	68.2	50.3	45.1
Follow- up test	90.0	80.0	70.0	57.5
Mean % ± SD	61.7±39.1	54.1 ± 35.1	45.4±27.3	38.3±23.4
T1 value	t = 1.3 (Insignificant)		t = 1.4 (Insignificant)	
	T2 = Practices in G I & G II (t = 4.2 , significant)			
	T3 = Knowledge in G I & G II (t = 3.0 , significant)			

Pre- test = before giving teaching methods - Post- test = immediately after completion of teaching methods . follow- up tests = post completion of the treatment protocol .

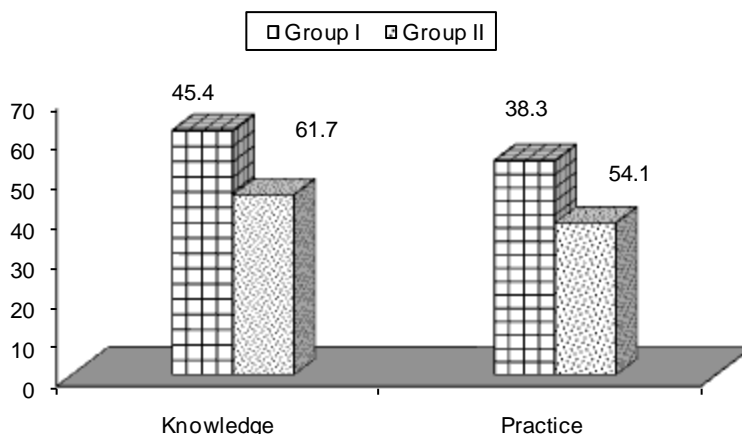


Figure (1): Presents two teaching methods effects on patients' satisfactory knowledge and practices in post tests

III. Discussion

The combination of radiotherapy and chemotherapy has been shown to reduce local recurrences and to improve survival for locally advanced rectal cancer . It can significantly enhance the pathological response in stage II/III rectal cancer as compared with surgery alone ^(19,20) . The present study aimed to evaluate the outcomes of two teaching methods on awareness of patients with rectal cancer undergoing preoperative concurrent chemoradiotherapy.

In the current study , findings regarding to patients' characteristics showed that more than half of the studied patients had age of 40 yrs and more in both study groups . In addition , married , unemployed , not smoking male patients with second degree of the disease were higher in Ain Shams (G1) than Tanta (G2) University Hospitals . **Kim et al. (2016)** ⁽¹¹⁾ stated that rectal cancer occurred at age over 50 years, but it can strike at younger ages and the incidence of rectal cancer among men is higher than in women with a ratio of 3:1 . **Torok et al. (2016) & Mohamed (2011)** ^(21,22) reported that, survival rate for rectal cancer stage II (73%) and stage III (56%) . Moreover, patients at early stages had high functional and global health status, low symptoms and better quality of life. Also , treatment schedule lead to persistent fatigue and feeling of inability to perform any work so , income wasn't enough to meet treatment costs .

Considering patients` satisfactory knowledge and practices about preoperative concurrent chemoradiotherapy and rectal cancer among the studied patients. Results showed significant improvement in post test compared to pre test . This result may be interpreted as education has a vital role in improving patients` knowledge and practices , then consequently QOL . **Chen et al. (2016)** ⁽¹⁴⁾ stated that more than half of the studied patients, their knowledge and practices about radiotherapy were poor in pre test . Moreover, patients should have appropriate and adequate information pre treatment sessions to enhance their life . **Dewit et al. (2016) & Abd El Razik (2010)** ^(12,23) stressed that assessing patients` educational level and expectation of health care have implications for teaching . Patients must acquire knowledge pre treatment such as diagnostic measures , physical activities , management and complications , side effects management , compliance with follow up visits , hygiene , safety measures , diet , emergency calling , daily living activities and pre surgical preparations.

In addition, **Lewis et al. (2014) & EL-Sayed (2010)** ^(13,24) recommended that patients should be educated to perform bathing / hygienic measures, exercises technique , skin care methods , infection control measures , preparation for diagnostic measures , pre concurrent chemo – irradiation treatment protocol and pre surgery .

In relation to studied patients` anxiety concerns in pre test as regards : lack of awareness , pain severity, physical side- effects , patients / family burden , recurrence / metastasis , deformity and difficult to cope . **Kim et al. (2016)** ⁽¹¹⁾ and **Ferrari & Fichera (2015)** ⁽²⁵⁾ discussed that, anxiety activates sympathetic nervous system and affects immune responses . Patients were complaining from a lot of fears, insecurity, alienation, feelings of strangeness, rejection and many other negative reactions . Moreover, severe anxiety is a very common side effect in some of patients and they should be aware that medications predispose them to anxiety which require instructions to control it effectively. Reassurance of patients should be done and the provision of diversion during treatment protocol, added to antianxiety medications as ordered . Moreover, **Hinkle & Cheever (2014)** ⁽²⁶⁾ mentioned that teaching patients represent an important role in the

treatment and contributes to decrease anxiety level . . He also concluded that teaching patients is a vital part in the treatment.

As regards fatigue and pain levels among studied patients, results revealed significant reduction in post-tests (at the end of radiotherapy) . **Lee et al. (2017)** ⁽²⁷⁾ & **Janaki et al. (2010)** ⁽¹⁸⁾ mentioned that, fatigue is a frequent side effects of cancer treatment and may result in early termination of therapy. Side effects that developed with concurrent chemo – irradiation treatment protocol some days include fatigue . Moreover , pain that considered as a disease manifestations was relieved post treatment sessions .

In relation to the differences between two teaching methods, results revealed significant improvement in post and follow up tests among studied patients having educational program compared to instructional booklet. The previous findings could be attributed to the fact that, program was given in this study using lectures, educational pamphlet , demonstration and video . According to **Xu (2012)** ⁽⁹⁾ , Lecture has many advantages including the ability to cover a large amount of material quickly , provide cost effectiveness , a way to introduce new material, continue discussion of a topic .

According to **Dewit et al. (2016)** ⁽¹²⁾ & **Friedman et al. (2011)** ⁽²⁵⁾ , in video education a written post-test could be used after the video is reviewed . It is important to consider patients' educational level, language, hearing and seeing abilities. In addition, demonstration is an effective patient -teaching technique whereas patients can be showed how to complete a task and then can do the task more effectively at home. It ensure that patients fully understand , allows them to get feedback and ask questions in a safe arena . **Lewis et al. (2014)** ⁽¹³⁾ recognized that written material which seems so easy and routine can be effective e.g material with pictures can offer instructions or explanations in a step by step fashion . Once again, it is important to evaluate patients' literacy level, language and sight before handing out routine teaching materials.

IV. Conclusion

In light of current study results , it can be concluded that the two teaching methods were helpful on improving awareness of patients with rectal cancer undergoing preoperative concurrent chemoradiotherapy and educational program method was the best . Moreover, significant reduction on fatigue and pain levels added to treatment side effects among the studied patients.

V. Recommendations

- Awareness program should be prepared for patients with concurrent chemoradiotherapy.
- Continuous needs assessment for such group of patients should be done
- Illustrated brochure for patients scheduled for preoperative concurrent chemoradiotherapy should be provided.
- Further studies should be carried out on a large number of patients with preoperative concurrent chemoradiotherapy for evidence of the results and generalization .

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