

## Effect of implementing educational program in family caregivers on minimizing colorectal cancer complications

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**Abstract: Background:** Cancer and cancer treatment did not affect only the patients, but it also affects their family members and caregivers. Colorectal cancers cause a variety of side effects. The family care givers play an important role in managing these side effects by putting a specific treatment plan. **Methods:** This study will attempt to improve the knowledge and practice of family caregivers in colorectal cancer to reduce the side effects of surgery, chemotherapy and radiotherapy. This prospective study included 40 caregivers of colorectal cancer patients in oncology department, Tanta university hospitals from September 2016 to January 2017. The patients and family caregivers' socio demographics data were collected. Total scoring of knowledge were done pretraining, immediately after training, and 1 month later on fatigue symptom inventory was translated into arabic and used for assessing the degree of fatigue with chemo and radiotherapy. Ostomy skin tool assessment was used. Each session took about 30 to 60 minutes. For comparison between means ANOVA test was used. Pearson and Spearman's correlation was used for comparison between variables with  $P < 0.05$  considered as significant. **Results:** Significant difference related to total knowledge of caregivers in pre training, immediate assessment and 1 month later. In relation to fatigue symptom inventory there was significant difference in pre treatment and 1 month after treatment end. **Conclusion:** There is highly significant correlation between total practice and total knowledge throughout the period of the study. This indicated that the structured program was effective to improve the knowledge and practice score of the caregivers towards the care of colorectal cancer patients.

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**Keywords:** Structured program, colorectal, fatigue symptom inventory, ostomy scale

### 1. Introduction

The third cause of cancer worldwide is colorectal cancer (CRC) [1]. In Egypt CRC is 6<sup>th</sup> cause, consisting 4% of total cancers and 53% of gastrointestinal cancers [2]. Early diagnosis of colorectal cancer has improved using modern diagnostic techniques [3].

Cancer and its treatment did not affect only the patients but also their family members and caregivers. Caregivers of cancer patients are confronted with emotional and psychological challenges [4-5].

The standard management of colorectal cancer patients in earlier stages is surgery possibly with colostomy and may palliative colostomy in late stages [6-8]. Patients with colostomy became dependent on hospital staff as well as caregivers. Most of caregivers have not the ability to provide care to their patients with quality, so there is need to assist in educating the caregivers of colostomies patients [7-8].

The care of cancer patients has been shifted from the hospital to home care as a result of increased treatment of cancer patient as outpatient hospital clinic, shortened hospital stays and longer overall and disease free survival [9].

Knowledge of care, cure and prevention are needed for health caregivers of colorectal cancer patients to help them [10-11].

This study will attempt to improve the knowledge of colorectal cancer patients' caregivers in order to lessen the side effects of chemotherapy, radiotherapy and colostomy care.

### 2. Patients and methods

This quasi experimental study was conducted in Clinical Oncology Tanta university hospitals from September 2016 to January 2017. Forty patients with pathological diagnosed colorectal cancer treated with surgical approach with either temporary or permanent colostomy for earlier stages or palliative colostomy for

late stages with or without chemotherapy or target therapy and radiotherapy according to guidelines.

The inclusion criteria included patients and caregivers who were older than 18 years old of both sexes. Care givers who are willing to participate in this study.

Patients demographics data are collected including age, sex, special habit, (smoking), marital status, educational level, date of admission. Also caregivers' demographic data were collected including age, sex, educational level, occupation, relationship with patients and whether he attended educational care plan or not before.

Total scoring of knowledge was done using 20 structured questionnaires for each patient taking about 20 minutes [12]. These questions included the knowledge about the disease, risk of colorectal cancer, colostomy care, chemotherapy, radiotherapy and their side effects, the care of colostomy. The answers will be yes or no. the knowledge score were classified into three categories as good, fair and poor with scale of > 75%, 50%-75% and < 50% respectively.

To evaluate the family caregivers practices an evaluation checklist taken from (Potter & Perry, 2011) [13] and translated into arabic to test the actual practices done by the caregivers before implanting the educational care plan and after implanting. The total score will be interpreted as good, adequate and inadequate practice if score >70%, 60%-70% and <60% respectively.

Fatigue symptom inventory (FSI) was used and also translated into arabic [14]. The questions were 14 questions with each question had from 0-10 score. The final scores will be interpreted from no fatigue with patients with score, less than 36 and extreme fatigue for scores 110-131.

Guided by Martinet al, 2010[15] ostomy skin tool assessment as regard the size, color, skin changes, and infection.

To implement the education protocol we put a guideline booklet, posters, videos, and power points to improve the care of colorectal cancer patients. The session duration was ranged between 30 minutes to one hour. and the patients were divided into 5 groups and each group consisted of 8 patients each.

The sessions were divided into theoretical part and practical part., for theoretical part, it consisted of four sessions. The first session was about the program itself and what is known about colorectal cancer with duration of 30 minutes. The second session was how to manage the radiotherapy side effects with duration of 45 minutes. The third session was how to manage the

chemotherapy side effects with duration of 45 minutes. And lastly the fourth session about stoma care with duration of 45 minutes.

The practical part consisted of one session only about colostomy care including measuring the stoma, how to change, how to irrigate and peristomal skin care. The teaching includes group discussion and demonstration and its duration was 60 minutes.

Then we evaluated the educational care plan immediately and 1 month after educational program.

### Consent

Written consent was taken from all participants.

### Statistical analysis

The statistical analysis was done using spss version 23. Range, mean and standard deviations for quantitative data were used while chi square test was used for qualitative one. For means comparison we used ANOVA test. Correlation of variables was done using Pearson and Spearman's correlation coefficient. A value less than 0.05 were considered significant [16].

### 3. Results

This study was carried out in oncology department, Tanta university hospitals in 40 patients with colorectal cancer either early stage operated with palliative, temporary or permanent colostomy. This was followed either with chemotherapy, target therapy or radiotherapy according to stage in accordance with guidelines.

Table (1 & 2) showed the sociomedical demographics of colorectal cancer patients. Fifty five (55%) of colorectal cancer patients aged more than 40 years old. Also, it was found that (52.5%) were females and (47.5%) of them were males.

Also 50 %, 17.5% & 32.5% of cases were married, single and divorced respectively. Approximately 52.5% of them were house wives and 10% of them were employee. The majority of the sample 62.5% was resident of rural areas while 37.5% of the sample was from urban. Regarding education, it was found that 50% of the studied patients were illiterate, 7.5% of them read and write & primary level, 32.5% were intermediate level and 2.5% were academic level. Regarding obesity 42.5% were obese; the food contained fat, spicy, takeaway were 55%, 72.5% & 72.5%.

In relation to smoking, it was found that two third of cases were non smoker with mean of (12.36±6.523) table (3).

**Table (1) distribution of studied patients according to their sociodemographics:**

characteristics	The studied patients	
	n	%
Sex		
• Female	21	52.5%
• Male	19	47.5%
Age		
• 21-30 years	3	7.5%
• 30-40 years	15	37.5%
• More than 40 years	22	55%
Marital status		
• single	7	17.5%
• married	20	50%
• divorce	15	32.5%
occupation		
• employee	4	10%
• Worker	5	12.5%
• Free work	10	25%
• House wives	21	52.5%
residence		
• Rural	25	62.5%
• urban	15	37.5%
Educational level		
• illiterate	20	50%
• read and write	3	7.5%
• primary (basic level)	3	7.5%
• intermediate level	13	32.5%
• academic (high level)	1	2.5%

**Table (2) distribution of studied patients in relation to medical data**

Characteristics	The studied patients	
	n	%
Hypertension		
• not controlled	13	32.5%
• controlled	27	67.5%
Anemia		
• no	23	57.5%
• yes	17	42.5%
Obesity		
• no	23	57.5%
• yes	17	42.5%
Allergy history		
• none	31	77.5%
• food	4	10%
• medications	5	12.5%
Diet		
• fat	22	55%
• spicy food	29	72.5%
• takeaway and smoked food	29	72.5%
Family history		
• none	10	25%
• father	7	17.5%
• mother	8	20%
• brother/sister	7	20%
• uncle/aunt		17.5%

**Table (3) the percentage distribution of studied patients in relation to smoking habits:**

Smoking habits	The studied patients	
	n	%
Smoking		
• No	26 14	65%
• yes		35%
Duration of smoking (in years)	4-21	
• Range	12.36+ 6.523	
• Mean + SD		
Number of packs per day		
• 1	2 8 4	14.3%
• 2		57.1%
• 3		28.6%
Previous smoking attempt of giving up		
• no	10 4	71.4%
• yes		28.6%

**Table (4) distribution of family caregivers according to sociodemographics data:**

characteristics	The studied patients	
	n	%
Sex		
• Female	31 9	77.5%
• Male		22.5%
Age		
• 21-30 years	2 26 12	5%
• 30-40 years		65%
• More than 40 years		30%
Marital status		
• single	2 31 3 4	5%
• married		77.5%
• widow		7.5%
• divorce		10%
occupation		
• employee	3 1 5 31	7.5%
• Worker		2.5%
• Free work		12.5%
• House wives		77.5%
residence		
• Rural	26 14	65%
• urban		35%
Educational level		
• illiterate	13 7 3 17	32.5%
• read and write		17.5%
• primary (basic level)		7.5%
• intermediate level		42.5%
Relationship with patients		
• First grade	40	100
Educational program attendance about colorectal cancer		
• No	40	100

As regard family caregivers, it was found that 77.5% of the studied caregivers were house wives, 7.5% of them were employee, 2.5% were workers and

12.5% had free works. The majority of the sample 65% was resident of rural areas while 35% of the sample was from urban. Regarding education, it was

found that 42.5% of the studied caregivers were intermediate level, 32.5% of them were illiterate, 17.5% were read and write and 7.5% were primary level. Considering the relationship with patients, it was found that 100% of the studied caregivers were first grade relation table (4).

As regard the most common risk factors for colorectal cancer, it was found that 27.5%, 82.5% & 55% of the studied caregivers had correct answer in preassessment, in immediate assessment and in post one month assessment respectively with significant difference at P value=0.00. In relation to manifestations of colorectal cancer, it was found that 35%, 92.5% and 72.5% of the studied caregivers had correct answer in pre assessment, in immediate and in post one month assessment respectively with significant difference (P value=0.00). As regard the definition of colorectal cancer, it was found that 45%, 97.5% & 87.5% of the studied caregivers had correct answer in pre assessment, in immediate assessment and in post one month assessment respectively with significant difference (P value=0.00) table (5).

Concerning the immediate side effect after chemotherapy treatment, it was found that 10%, 92.5% & 57.5% of the studied caregivers had correct answer in pre assessment, in immediate assessment and in post one month assessment respectively with significant difference (P value=0.00). Considering the side effect that occurs two weeks later from chemotherapy side effect, it was found that 2.5%, 85% & 37.5% of the studied caregivers had correct answer in pre assessment, in immediate assessment and in post one month assessment respectively with significant difference (P value=0.00) table (5).

Regarding the most important precautions to reduce mucositis, it was found that 15%, 85%, & 30% of the studied caregivers had complete correct answer in pre assessment, in immediate assessment and in post one month assessment respectively with significant difference (P value=0.00). In relation to the Care to get rid of diarrhea as side effect of chemotherapy, it was found that 15%, 85%, 72% of the studied caregivers had correct answer in pre assessment, in immediate assessment and in post one month assessment respectively with significant difference (P value=0.00) table (5).

In table (6), Regarding the factors to reduce fatigue as a serious side effect of chemotherapy, it was found that 0.0%, 30% & 10% of the studied caregivers had complete correct answer in pre assessment, in immediate assessment and in post one month assessment respectively with significant difference at P value=0.00. In relation to the types of radiation, it was found that 17.5%, 75% & 52.5% of the studied caregivers had complete correct answer in pre assessment, in immediate assessment and in post one

month assessment respectively with significant difference (P value=0.00) table (5).

Concerning the most important side effect of radiation treatment, it was found that 17.5%, 90% & 62.5% of the studied caregivers had complete correct answer in pre assessment, in immediate assessment and in post one month assessment respectively with significant difference (P value=0.00) table (5).

Regarding Most useful guidelines to deal with the inflammation of skin serious side effects of radiation, it was found that 7.5%, 77.5%, & 50% of the studied caregivers had correct answer in pre assessment, in immediate assessment and in post one month assessment respectively with significant difference (P value=0.00) table (5).

Considering the most important guidelines followed after radiation treatment, it was found that 15%, 57.5% & 17.5% of the studied caregivers had complete correct answer in pre assessment, in immediate assessment and in post one month assessment respectively with significant difference (P value=0.00) table (5).

Regarding the surgical treatment of colorectal cancer, it was found that 2.5%, 42.5% & 15% of the studied caregivers had complete correct answer in pre assessment, in immediate assessment and in post one month assessment with significant difference (P value=0.00) table (5).

In table (6) considering to the total knowledge level in the immediate period, it was revealed that 7.5% of the studied caregivers had poor level of knowledge, while 5% of them had fair level and 87.5% of them had good level of knowledge. Concerning to the total knowledge level in the post assessment period, it was revealed that 70.5% of the studied caregivers had poor level of knowledge, while 27.5% of them had fair level and 2.5% of them had good level of knowledge.

Table (7) shows Percentage distribution of the studied caregivers in relation to their practice to colostomy care throughout periods of study. There was significant correlation.

It was found that there is significant difference between both of total knowledge level and total practice level of the studied throughout periods of study with P value=0.00 table (8). Statistical significant difference was found between pre and post assessment of the studied patients in relation to fatigue symptom inventory (FSI) items with P value 0.00 table (9).

Regarding the residence if the studied caregivers in correlation with their total knowledge, it was found that that there is a statistical significant difference at P value=0.041 in pre assessment period and at P value =0.001 in post assessment period table (10).

**Table (5) distribution of studied caregivers about their knowledge about colorectal throughout the study**

Knowledge items	pre		immediate		Post 1 month		X <sup>2</sup> p
	N	%	N	%	N	%	
1- Risk factor for colorectal cancer • Incorrect • correct	29 11	72.5% 27.5%	7 33	17.5% 82.5%	18 22	45% 55%	24.44 0.00*
2- Manifestation of colorectal cancer • Incorrect • correct	26 14	65% 35%	3 37	7.5% 92.5%	11 29	27.5% 72.5%	30.68 0.00*
3- Definition of colorectal cancer • Incorrect • correct	22 18	55% 45%	1 39	2.5% 97.5%	5 35	12.5% 87.5%	34.75 0.00*
4- Immediate side effect after chemotherapy treatment • Incorrect • correct	36 4	90% 10%	3 37	7.5% 92.5%	17 23	42.5% 57.5%	55.11 0.00*
5- side effects after chemotherapy treatment (2 weeks later) • Incorrect • correct	39 1	97.5% 2.5%	6 34	15% 85%	25 15	62.5% 37.5%	56.43 0.00*
6- precautions to reduce mucositis • incorrect • In complete correct • Completely correct	18 16 6	45% 40% 15%	0 6 34	0% 15% 85%	2 26 12	5% 65% 30%	66.78 0.00*
7- Care to manage diarrhea as side effect of chemotherapy • Incorrect • correct	34 6	85% 15%	6 34	15% 85%	11 29	27.5% 72.5%	45.63 0.00*
8- Fatigue as chemotherapy • Incorrect • Incomplete correct • Completely correct	31 9 0	77.5% 22.5% 0%	2 26 12	5% 65% 30%	8 28 4	20% 70% 10%	58.67 0.00*
9- Types of irradiation • Incorrect • Incomplete correct • Completely correct	24 9 7	60% 22.5% 17.5%	0 10 30	0% 25% 75%	8 11 21	20% 27.5% 52.5%	42.09 0.00*
10- Side effects of radiotherapy • Incorrect • correct	33 7	82.5% 17.5%	4 36	10% 90%	15 25	37.5% 62.5%	43.64 0.00*
11- How to deal with inflammation (side effect of RTH) • Incorrect • correct	37 3	92.5% 7.5%	9 31	22.5% 77.5%	20 20	50% 50%	40.20 0.00*
12- Guidelines followed after RTH treatment • Incorrect • In complete correct • Completely correct	14 20 6	35% 50% 15%	0 17 23	0% 42.5% 57.5%	1 32 7	2.5% 80% 17.5%	45.05 0.00*
13- Surgical treatment of colorectal cancer • Incorrect • In complete correct • Completely correct	29 10 1	72.5% 25% 2.5%	0 23 17	0% 57.5% 42.5%	15 19 6	37.5% 47.5% 15%	50.55 0.00*
14- Description of Color of colostomy • Incorrect • Correct	40 0	100% 0%	9 31	22.5% 77.5%	28 12	70% 30%	53.13 0.00*
15- Time of opening to be in its permanent size • Incorrect • Correct	34 6	85% 15%	7 33	17.5% 82.5%	13 27	32.5% 67.5%	40.61 0.00*
16- The basis of pouch choice • Incorrect • Incomplete correct • Completely correct	14 12 14	35% 30% 35%	0 16 24	0 16 24	1 19 20	2.5% 47.5% 50%	28.59 0.00*
17- Time of empty colostomy bag • Incorrect • Correct	31 9	77.5% 22.5%	9 31	22.5% 77.5%	10 30	25% 75%	31.75 0.00*
18- Time of empty pouch • Incorrect • Correct	28 12	70% 30%	6 34	15% 85%	14 26	35% 65%	25.83 0.00*
19- The pouch must be changed quite regularly • Incorrect • Correct	31 9	77.5% 22.5%	1 39	2.5% 97.5%	20 20	50% 50%	46.90 0.00*
20- Foods with odors which patient should not take • Incorrect • Correct	20 20	50% 50%	2 38	5% 95%	3 37	7.5% 92.5%	31.02 0.00*



**Table (6) distribution of studied caregivers in relation to their total knowledge level throughout the period of study:**

Knowledge items	pre		immediate		Post 1 month		X <sup>2</sup> p
	N	%	N	%	N	%	
• poor	40	100%	3	7.5%	28	70%	11 2.13 0.00*
• fair	0	0%	2	5%	11	25%	
• good	0	0%	35	87.5%	1	2.5%	
Range	0-14		14-25		10-20		F=230.28 P=0.00*
Mean +SD	6.60+4.29		21.65+2.49		15.63+2.31		

**Table (7): Percentage distribution of the studied caregivers in relation to their practice to colostomy care throughout periods of study.**

Practice to colostomy care	The studied caregivers (n=40)							χ <sup>2</sup> P
	Pre		Immediate		Post 1 month			
	N	%	N	%	N	%		
<b>First: Install the installer slot machine</b>								
▪ Incorrect	37	92.5	10	25.0	25	62.5	<b>38.13</b> <b>0.00*</b>	
▪ Correct	3	7.5	30	75.0	15	37.5		
<b>Second: Pouch change</b>								
▪ Incorrect	22	55.0	2	5.0	4	10.0	<b>33.91</b> <b>0.00*</b>	
▪ Correct	18	45.0	38	95.0	36	90.0		
<b>Third: Peristomal skin care</b>								
▪ Incorrect	3	7.5	0	0.0	0	0.0	<b>6.15</b> <b>0.046*</b>	
▪ Correct	37	92.5	40	100.0	40	100.0		
<b>Fourth: colostomy irrigation</b>								
▪ Incorrect	40	100.0	12	30.0	35	87.5	<b>55.93</b> <b>0.00*</b>	
▪ Correct	0	0.0	28	70.0	5	12.5		
<b>Total score</b>							<b>87.08</b> <b>P=0.00*</b>	
<b>Range</b>	<b>(0-3)</b>		<b>(2-4)</b>		<b>(1-4)</b>			
<b>Mean ± SD</b>	<b>1.45±0.64</b>		<b>3.40±0.67</b>		<b>2.40±0.67</b>			

**Table (8): Comparison between both of total knowledge level and total practice level of the studied throughout periods of study**

Total practice level		Total knowledge level						χ <sup>2</sup> P
		Poor		Fair		Good		
		N	%	N	%	N	%	
Pre	Inadequately done (n=38)	38	100.0	0	0.0	0	0.0	-
	Adequately done (n=2)	2	100.0	0	0.0	0	0.0	
Immediate	Adequately done (n=3)	2	66.7	1	33.3	0	0.0	<b>23.18</b> <b>0.00*</b>
	Good level (n=37)	1	2.7	1	2.7	35	94.6	
Post 1 months	Inadequately done (n=12)	9	75.0	3	25.0	0	0.0	1.778 0.777
	Adequately done (n=12)	8	66.7	4	33.3	0	0.0	
	Good level (n=16)	11	68.8	4	25.0	1	6.3	

**Table (9) (FSI) for assessment the degree of fatigue for adult undergoing radiotherapy of the studied patients pre and post assessment.**

FSI items	The studied patients (n=40)		
	Range Mean $\pm$ SD		Z P
	Pre assessment	Post assessment	
1. Level of fatigue on the day felt most fatigued.	(6-9) 7.78 $\pm$ 0.800	(4-8) 5.90 $\pm$ 1.057	<b>5.379</b> <b>0.00*</b>
2. Fatigue level on the day felt least fatigued.	(5-9) 7.50 $\pm$ 1.132	(4-8) 5.78 $\pm$ 1.025	<b>4.976</b> <b>0.00*</b>
3. Fatigue level on the average.	(5-9) 7.95 $\pm$ 1.218	(4-8) 6.00 $\pm$ 0.961	<b>4.914</b> <b>0.00*</b>
4. Fatigue level right now.	(4-9) 7.18 $\pm$ 1.430	(3-8) 5.48 $\pm$ 1.062	<b>4.749</b> <b>0.00*</b>
5. Fatigue level with general level of activity	(5-9) 7.15 $\pm$ 1.331	(4-8) 5.63 $\pm$ 1.275	<b>4.592</b> <b>0.00*</b>
6. Fatigue level interfered ability to bathe and dress.	(5-9) 6.70 $\pm$ 1.159	(3-8) 5.60 $\pm$ 1.105	<b>3.963</b> <b>0.00*</b>
7. Fatigue level interfered with normal work activity.	(4-9) 6.45 $\pm$ 1.280	(4-8) 5.38 $\pm$ 1.079	<b>4.108</b> <b>0.00*</b>
8. Fatigue level interfered with ability to concentrate	(5-9) 6.98 $\pm$ 1.097	(4-7) 5.85 $\pm$ 0.834	<b>4.586</b> <b>0.00*</b>
9. Fatigue level interfered relations with other people	(4-9) 7.10 $\pm$ 1.336	(4-7) 5.88 $\pm$ 0.883	<b>4.316</b> <b>0.00*</b>
10. Fatigue level interfered with enjoyment of life	(4-9) 6.70 $\pm$ 1.224	(3-8) 5.43 $\pm$ 1.259	<b>4.143</b> <b>0.00*</b>
11. Fatigue level interfered with mood	(4-9) 6.70 $\pm$ 1.181	(4-7) 5.70 $\pm$ 0.883	<b>4.192</b> <b>0.00*</b>
12. Number of days, felt fatigued for any part of the day	(5-7) 6.68 $\pm$ 0.656	(3-7) 5.30 $\pm$ 0.883	<b>5.031</b> <b>0.00*</b>
13. Fatigue level on the day, on average	(5-9) 6.58 $\pm$ 0.984	(4-7) 5.80 $\pm$ 0.723	<b>3.664</b> <b>0.00*</b>
14. Pattern describe the daily of fatigue	(2-4) 3.55 $\pm$ 0.597	(2-4) 3.30 $\pm$ 0.648	<b>2.486</b> <b>0.013*</b>

**Table (10): Correlation between sociodemographic data of caregivers and their total knowledge score among the studied sample throughout periods of study.**

Characteristics	Total knowledge score					
	Pre		Immediate		Post 1 months	
	r	P	r	P	r	P
<b>Age (in years)</b>	<b>-0.378</b>	<b>0.016*</b>	-0.187	0.247	<b>-0.325</b>	<b>0.041*</b>
<b>Sex</b>						
▪ Male	0.057	0.725	0.079	0.629	0.201	0.213
▪ Female	-0.057		-0.079		-0.201	
<b>Educational level</b>						
▪ Illiterate	<b>-0.767</b>	<b>0.00**</b>	<b>-0.595</b>	<b>0.00**</b>	<b>-0.614</b>	<b>0.00**</b>
▪ Read and write	0.278	0.082	0.136	0.404	0.064	0.694
▪ Primary level	0.248	0.123	0.058	0.721	<b>0.349</b>	<b>0.027*</b>
▪ Intermediate level	<b>0.381</b>	<b>0.015*</b>	<b>0.428</b>	<b>0.006**</b>	<b>0.347</b>	<b>0.028*</b>
<b>Residence</b>						
▪ Rural	<b>-0.324</b>		-0.310		<b>-0.506</b>	
▪ Urban	<b>0.324</b>	<b>0.041*</b>	0.310	0.051	<b>0.506</b>	<b>0.001**</b>
<b>Total practice score</b>	<b>0.408</b>	<b>0.009**</b>	<b>0.579</b>	<b>0.00**</b>	<b>0.404</b>	<b>0.010**</b>



#### 4. Discussion:

Cancer and its treatment did not affect only the patients but also their family members and caregivers. Caregivers of cancer patients are confronted with emotional and psychological challenges.

This study will attempt to improve the knowledge of colorectal cancer patients' caregivers in order to lessen the side effects of chemotherapy, radiotherapy and colostomy care.

Regarding education of care givers, the current result found that 57.5% had six grade and lower level of education. That was with in accordance to many studies. Regarding education of care givers, the current result found that 57.5% had six grade and lower level of education [12, 17-20]

In relation to occupation, in the present study it was found that 77.5% of the studied caregivers were house wives that in line with other authors [17-20].

Concerning to the residence of caregivers, the current study showed that more than half of the sample 65% was resident of rural areas while 35% of the sample was from urban which is accordance with Kadam et Shinde 2014, who reported that majority of caregivers (73.33%) were rural areas [18]

In the present Study, there is a significant increase in the mean knowledge score from 6.60 in pretest to 21.65 in immediate post test and to 15.63 in posttest. In pretest 100% of the studied caregivers had poor level of knowledge, while No one of them had fair and good level of knowledge respectively.

The total knowledge level in the immediate period, it was revealed that 7.5% of the studied caregivers had poor level of knowledge, while 5% of them had fair level and 87.5% of them had good level of knowledge. Concerning to the total knowledge level in the post assessment period, it was revealed that 70.5% of the studied caregivers had poor level of knowledge, while 27.5% of them had fair level and 2.5% of them had good level of knowledge. This was in accordance with other studies [12, 21-22].

Regarding the knowledge of caregivers about colostomy care (from 14 to 20 questions), the current study revealed that there was a significant difference at P value= 0.00 and showed that there are improvement of total knowledge in immediate and post one month assessment periods compared with pre-assessment period. This was in line with other authors [22-23].

In relation to the total practice level in the pre assessment period, it was revealed that 95% of the studied caregivers had inadequately done practice, while 5% of them had adequately done practice and 0% had good level of practice with mean of 3.53. This was in agreement with other authors [22-23]

Regarding the total practice level in the immediate period, it was revealed that 0% of the

studied caregivers had inadequately done practice, while 7.5% of them had adequately done practice and 92.5% had good level of practice with mean at 10.90. Also concerning to the total practice level in the post assessment period, it was revealed that 30% of the studied caregivers had inadequately done practice, while 30% of them had adequately done practice and 40% had good level of practice with mean at 8.33. this was in line with other authors [24-25].

This study showed that there was a statistical difference at level of practice regarding colostomy care throughout periods of study at P value=0.00 with Mean  $\pm$  SD 1.45 $\pm$ 0.64 in pre-assessment, 3.40 $\pm$ 0.67 in immediate post and 2.40 $\pm$ 0.67 in post one month periods. This is in agreement with others [23-25].

This indicated the total practice and the total knowledge had significantly improved the period of study. This indicated this structured program was effective to improve the knowledge and practice score of caregivers towards colorectal cancer patients.

Further studies are needed with large sample size and different oncology hospitals in order to standardize the results.

#### Conflict of interest:

The authors declare no conflict of interest

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