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Effect of Reflexology Training for Family Caregivers on Health Status of Elderly Patients with Colorectal Cancer

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Abstract:Patients with colorectal cancer experience physical, psychological and social challengesand family caregivers are usually not prepared for these new challenges.Foot reflexology is one of the most frequently used complementary therapies and has been shown to be effective for cancer patients.***The aim****:* Determine the effect of reflexology training for family caregiverson health status of elderly patients with colorectal cancer**.** ***Design****:* Quasi-experimental design was used in this study. ***Setting:***This study was carried out at Mansoura University hospital (Oncology Center).***Subjects:***A purposive sample of 50 elderly patients diagnosed with colorectal cancer and their family caregivers attending in the above mentioned settings within a period of six months.***Tools:***Six tools was utilized in this study;socio demographic and clinical data structured interview schedule,the short form (36) health survey, hospital anxiety&depression scale, memorial symptom assessment scale,foot reflexology knowledge structured interview schedule and foot reflexology training observational checklist.***Results:***Family caregivers' reflexology traininghas a significant positive effect on their knowledge and practicesandon elderly patients' health status, anxiety & depression and symptoms management.***Conclusion:***This study concluded that,the implementation of foot reflexology training forfamily caregivers was successful in improving their knowledge and practice regarding foot reflexology and in improving the health status of elderly patients with colorectal cancer.

Key words:Elderly, Colorectal cancer, Family caregivers, Reflexology.

INTRODUCTION

The world population is aging, it is expected that the proportion of elderly aged 65 years and more reach 21% in 2050. Cancer is predominately a chronic disease of older adults and it is expected that the number of older adults' patients with cancer largely increase [1].Colorectal cancer (CRC) is one of the most predominant types of cancer worldwide. CRC is the third most common cancer and the fourth most common reason of cancer death [2]**.** In Egypt, CRC ranks the sixth most common cancer in males and females[3]. CRC has the highest frequency and mortality in older personsandapproximately 60% of CRC patients are geriatric patients [4]**.** However, those patients tend to be under diagnosed and undertreated in clinical practice [5].

Colorectal cancer patients suffer from symptoms of the disease,such as change in bowel movements, abdominal pain, fatigue, blood loss, anemia, and weight loss, and also from conventional treatment related symptoms, such as fatigue, anxiety, depression, pain, and nausea., which can directly impair their quality of life (QOL) particularly for elderly patients and those with co-morbidities [6]. Therefore, for cancer survivors, it is essential to find non pharmacological therapies for improving QOL and long term health status outcomes **[7]**.

Recently, the use ofcomplementary and alternative medicine (CAM) is on the rise even in developed countries **[8]**. CAM includes health care approaches developed and utilized outside conventional medicine for specific condition or whole wellbeing [9]. Cancer patients access complementary therapies to help them manage the disease and its treatment side effects [10].

Foot reflexology is one of the most frequently used complementary modalities and has been shown to be effective in improving the quality of life of cancer patients [11]**.** Reflexology can be defined as "the use of sophisticated system of touch usually on the feet in which the area being massage is thought to correspond to a map of the whole body" [12]. According to the principles of reflexology the foot consists of reflex point which relates to different organs and parts of the body and by applying pressure to these points, it can rebalances the flow of energy which resulted in illness [13]. It has been used to address the physical and psychological symptoms associated with the cancer or its treatments [14]. Therefore, reflexology as a CAM modality must be incorporated into nursing practice to make it more accessible to patients to promote well-being and quality of life [15].

On the other hand, family caregivers have an important role, usually unpaid, in caring elderly patients with cancer. Those family caregivers may not be prepared for the challenges of caregiving [16]. Gerontological nursing care must be holistic in which physical, emotional, social and spiritual aspects of persons reconsidered. The integration the best CAM into conventional treatment support holistic care. Moreover, the care of family caregivers is a part of holistic approach as well [17]. One of the priorities of nursing

professional is the cares of family members who care for terminally ill patients [18].

Family caregivers are often willing to support their patients by delivering complementary therapies such as reflexology. Trained reflexologists can ideally delivered reflexology, while the availability of family caregivers may be an important resource for providing this effective therapy. Family caregivers' involvement can provide access to reflexology in the home, safe environment for cancer patients who are susceptible to infections because of the suppressed immunity and cancer-related fatigue; regrettably they may lack essential training regarding reflexology[19].

Significance of the study:

Colorectal cancer is the six most common cancers in Egypt.As the number of elderly individuals is increasing due to the increase in the average life span, the number of elderly patients diagnosed with CRC is also expected to increase. Patients with colorectal carcinoma experience physical, psychological and social challenges. In Egypt, most of the care to elderly people is delivered by family memberswho are usually not prepared for these new challenges. The use of reflexology has increased extremely over the last decade and claims have been made for its utilization in several health conditions including cancer. So it is important to conduct this study to determine the effect of family caregiver delivered reflexology on the health status of elderly patients with colorectal cancer.

Aim of the study:

The aim of this study was to determine the effect of reflexology training forfamily caregivers on health status of elderly patients with colorectal cancer.

Research hypothesis:-

1. Family caregivers' knowledge and practice regarding foot reflexology will improved after training
2. Elderly patients with colorectal cancer who receive foot reflexology will have better health status than those who do not receive it.
3. Elderly patients with colorectal cancer who receive foot reflexology will have lower level of anxiety & depression and symptoms distress than those who do not receive it.

Subjects and method:

Research design:

A quasi experimental design was used in this study.

Setting:

This study was conducted in the inpatient wards (2 medical & 3 surgical wards) and follow up was carried out in the out patients clinics in the Oncology Center at Mansoura city.

Subjects:

The study subjects comprised 50 elderly patients diagnosed with colorectal cancer and their family caregivers attending in the above mentioned settings within a period of six months (from 1st of June 2016 till the end of November, 2016).The study subjects were divided alternatively into two equal group 25 subjects each, one study group who received conventional treatment of cancer plus foot reflexology by family caregiver and one control group who received conventional treatment of cancer only.

❖ ***Inclusion criteria:***

Patients*:*

- Age 60 years and above.
- Both sexes.
- Diagnosed with colorectal cancer.
- Willing to participate in the study.

Family Caregivers:

- Being the main caregiver
- Age: Over 18 years
- Subjects' self-report of having physical and psychological ability to attend the study
- Able to communicate
- Have access to telephone
- Education level above elementary school
- Not participating in any other similar studies.

❖ ***Exclusion criteria:***

- Elderly patients who have foot surgery in the previous six weeks or have open skin wounds on the feet, foot tumors or foot metastases, radiation to the feet, deep vein thrombosis, peripheral neuropathy and diabetes mellitus will be excluded.
- Family caregivers who will have any problems prohibiting them from continuing the study, caregivers' absenteeism in more than one session or patients' death during the study will be excluded.

Tools:In order to collect the necessary data for the study six tools were used:

***Tool I*:** **Socio demographic and clinical data structured interview schedule:** It was developed by the researcher after literature reviewing and included two parts:

Part I*:* 1- Socio-demographic characteristics of the patients such as age, sex, marital status, level of education,
2-Health profile of the study subjects such as suffering from other disease, medication taken, previous surgery, body mass index (BMI)
3- Cancer history: location, duration, received treatment and presence of stoma.

Part II:Data about older adult's caregiver;Socio-demographic characteristics of the care giver such as age, sex, level of education, marital status, andrelation to elderly**.**

Tool II:**The Short Form (36) Health Survey:** The Medical Outcomes Survey Short Form (SF-36) it was developed by **Ware &Sherbourne, 1992**[20] to assess self-reported health status of patients. This tool was translated into Arabic and tested for its validity and reliability by **Hassan, (2011)**[21]using test retest reliability Spearman's correlation coefficient ranged from 0.8. The SF-36 consists of eight scaled scores, which are the weighted sums of the questions in their section. Each scale is directly transformed into a 0-100 scale on the assumption that each question carries equal weight. The lower the score the more disability.The higher the score the less disability. The eight sections are: vitality, physical functioning, bodily pain, general health perceptions, physical role functioning, emotional role functioning, social role functioning, mental health.

Tool III:Memorial Symptom Assessment Scale; short form (MSAS):

The MSAS-SF was developed by **(Chang et al., 2000)**[22]. It is an instrument designed to assess the physical and psychological symptoms experience and distress by patients with cancer. It includes 32 items for which the patient report on whether a symptom occurred as well as distress it may have caused within the past week. Occurrence is documented on a yes / no basis, Distress is rated on a 5-point (0–4) Likert scale (not at all, 0.8; a little bit, 1.6; somewhat, 2.4; quite a bit, 3.2; very much, 4.0). Frequency of psychologic symptoms is scored as rarely (1), occasionally (2), frequently (3), and almost constantly (4). Total of MSAS-SF is average of the symptom scores of all 32 symptoms.

***Tool IV: Hospital Anxiety and Depression Scale (HADS)*:**

It was developed by **Zigmond&Snaith (1983)**[23]. HADS is a self-report questionnaire commonly used to assess levels of anxiety and depression. This scale was translated into Arabic and tested for its validity and reliability by **AbdElhameed, (2010)**[24] using test retest reliability Spearman's correlation coefficient r=0.861. The HADS comprises statements which the patient rates based on their experience over the past week. The 14 statements are relevant to generalized anxiety (7 statements) or 'depression' (7 statements). Each question has 4 possible responses. Responses are scored on a scale from 3 to 0. The two subscales, anxiety (HADS-A) and depression (HADS-D), have been found to be independent measures.

***Tool V:*Foot reflexology knowledge, structured interview schedule**: This tool was developed by the researcher after reviewing the relevant literature. It was used to assess knowledge of the studied family caregivers about foot reflexology. It included questions about definition, history, mechanism, advantage, possible effects during and after session, contraindications, and care of patient after receiving foot reflexology. The total number of questions was fourteen (14); each question had a group of correct answers, each correct answer was given a score of one (1), while wrong, did not know or no answer was given a score of zero (0). The scores obtained for each set of questions were summed up to get the total scores for caregiver's knowledge. The total score is 60 and was classified as follow:

- **Good Knowledge:** more than or equal 75% (score ≥45)
- **Fair Knowledge:** 50% to less than 75% (score 30 to ≥45)
- **Poor Knowledge:** less than 50% (score < 30).

Tool VI: **Foot reflexology observational checklist**: This tool was developed by researcher after her training and reviewing literature to ensure that the studied family caregivers master the technique of foot reflexology and practice it correctly to the older patient. Scoring of the checklist items was made using 3-point Likert scale ranging from zero (0) to two (2). A score of two (2) was given to those who perform each step correct and completely, a score of one (1) was given to those who perform the step incompletely, while those who didn't perform the step got a score of zero (0). The scores obtained for each set of questions were summed up to get the total scores for caregiver's practice. The total score is 36 and was classified as follow:

- **Good Practice:** more than or equal 75% (score ≥27)
- **Fair Practice:** 50% to less than 75% (score 27 to ≥18)
- **Poor Practice:** less than 50% (score < 18)

METHOD

Administrative design:

An official letter was issued from the Faculty of Nursing, Mansoura University to the director of Mansoura Oncology Center to obtain his approval to carry out the study. The director of the Oncology Center was informed about the purpose of the study, the date and the time of starting data collection in order to obtain his approval to interview the elderly patients and their family caregivers.

Operational Design:

Preparatory phase:

The researcher received training concerning foot reflexology by a professor in physical therapy, faculty of physical therapy, Cairo University. The training started first by observation for reflexology by the professor, and then the researcher started to demonstrate reflexology under her supervision until the skill was mastered by researcher. After extensive review of literature, tools of data collections were developed & adopted, and teaching materials used in the study were prepared as audiovisual material and booklet.

Content validity:

Study tools were tested for content validity and revised by jury of 7 experts in the fields of Gerontological Nursing, Community health Nursing, Community health Medicine and Physical therapy, as a jury to test its content validity and feasibility and necessary modification were done

Pilot study:

A pilot study was conducted on 5 elderly patients and their family caregivers from outpatient clinics in Mansoura Oncology Center before starting the data collection to test the feasibility of the tools and to identify the approximate time needed for the interview. The family caregivers participated in the pilot study were excluded from the study sample. The data obtained from the pilot study was analyzed and according to the results, the recommended changes were done. The pilot study was carried out two weeks before starting the study

Ethical consideration:

- Ethical Approval was obtained from the research ethics committee of the Faculty of Nursing – Mansoura University.
- A verbal consent from the study subjects to participate in the study was obtained after explaining the purpose of the study by the researcher.
- Privacy of the subjects was assured and confidentiality of the collected data was maintained.
- Study subject were informed about their right to withdraw from the study any time without penalty.

Field work:

- The study tool I, tool V and tool VI were developed by the researcher and reviewed by the supervisors.

- Tool III (MSAS) was translated by the researcher into Arabic language and tested using test – retest method. The reliability was assured by means of Cronbach's alpha (r) = 0.85.
- Educational booklet was developed by the researcher after reviewing the relevant literature which included information about colorectal cancer and foot reflexology and the technique of foot reflexology session in simple Arabic language with colored pictures.
- The researcher used to did a telephone call weekly for subjects in the study group to evaluate feedback regarding at-home performance, self-reported adherence, answer any questions, and clarify any vague points so as to maintain each study subject motivation and provide positive feedback and reinforcement.
- The data collection covered a period of 9 months from the first of June, 2016 till the end of February, 2017. Data collection schedule days start from 9 am to 2 pm.

Training implementation:

- The developed training program for the family caregivers was conducted individually in inpatient wards of the Oncology Center at Mansoura city. The duration of each session took about 30-45 minutes for 5 days per week.
- The training program about foot reflexology was composed of 5 sessions (3 educational and 2 training sessions) implemented over 5 days

Evaluation phase:

- Immediately after implementation of the proposed training, assessment of family caregivers in the study group using tool V(Foot reflexology knowledge, structured interview schedule) and tool VI (Foot reflexology training observational checklist) to determine the effect of the sessions and then after the 6 week, and 12 week from the initiation of reflexology sessions.
- Evaluation of elderly patients in study and control group by using tool II (SF-36), tool III (MSAS) and tool IV (HADS) was done after the 6 week (post 1), and then 12 week (post 2)from the initiation of reflexology sessions by the family caregivers.

Statistical analysis:

Statistical presentation and analysis of the present study data were carried out, by using the Statistical Package for Social Sciences (SPSS) version16. The following statistical measures were used, Descriptive statistics (Count and percentage: Used for describing and summarizing data(Arithmetic mean (X) and standard deviation (SD), They were used for non-parametric quantitative data.(Analytical statistics: (Pearson' s Chi square test ($\chi 2$), Monte Carlo exact test and Fisher exact test (FET), Student t-test of significance, and Paired sample t-test. It was used for comparison between groups (ANOVA test of significance, Spearman's correlation coefficient. Additionally, Graphs were done for data visualization and using SPSS and Microsoft Excel. The difference was considered significant if $P \leq 0.05$.

RESULTS

Table (1) shows socio-demographic characteristics of the studied elder sample in both groups. The age of the studied elderly ranged from 60 to 83 years with a mean age 65.92± 6.42 and 67.08±7.08 for the study and control group respectively. Females were more prevalent in the studied older adults. Illiteracy was prevailing among both groups. The majority of the study and control groups were residing in rural areas. There was no statistical significant difference between the study and control group.

Table (1): socio-demographic characteristics of the studied older sample in both groups

Socio-demographic characteristics of elderly	Study group		Control group		Test of significance
	No (25)	(%)	No (25)	(%)	
Age					
60<75 years	22	88	20	80	t = -.606 (0.547)
75<85 years	3	12	5	20	
Mean ± SD	65.92± 6.42		67.08±7.08		
Sex					
Male	12	48	11	44	$\chi 2$ = 0.081 (0.777)
Female	13	52	14	65	
Marital status					
Single	1	4	0	0	$\chi 2$ = 3.422^ (0.331)
Married	17	68	13	52	
Widow	7	28	11	44	
Divorced	0	0	1	4	
Educational level					
Illiterate	10	40	11	44	$\chi 2$ = 3.124^ (0.373)
Read and write	3	12	7	28	
Secondary	8	32	4	16	
University	4	16	3	12	

Occupation before retirement					
Housewife	13	52	14	56	$\chi2 = 0.491$^ (0.974)
Employee	5	20	4	16	
Farmer	3	12	4	16	
Worker craftsman	4	16	2	8	
Driver	0	0	1	4	
Residence					
Rural	14	56	17	68	$\chi2 = 0.764$ (0.382)
Urban	11	44	8	32	
Living condition					
With family	22	88	21	84	$\chi2 = 0.166$ (0.684)
With sons	3	12	4	16	

Student t-test - Pearson Chi-Square $\chi2$ test ^ P value based on Monte Carlo exact probability

Table (2) shows cancer history among the studied older sample in both groups. It is observed from this table that, colon cancer was the most common site reported by the elderly. Bleeding per rectum was the main presenting symptom for colorectal cancer among older patients in both groups. It is noticed that surgery was the main type of treatment. About two third (68%) of the study group and of the control group did not have stoma. the majority of the studied elderly reported negative family history. No statistically significance difference was observed between both groups.

Table (2): Cancer history among the studied older sample in both groups

Item	Study group		Control group		Pearson Chi-Square $\chi2$ test (P)
	No (25)	(%)	No (25)	(%)	
Site of cancer					
Colon cancer	19	76	17	68	$\chi2 = 2.022$ (0.364)
Rectal cancer	1	4	4	16	
Colorectal	5	20	4	16	
Duration from diagnosis (months)					
Mean ± SD	7.64±5.94		7.68±4.25		t = -.027 (0.978)
Cancer symptoms					
Abdominal pain	5	20	2	8	$\chi2 = 1.716$ (0.424)
Constipation	4	16	6	24	
Bleeding per rectum	16	64	17	68	
Type of treatment					
Surgery	12	48	11	44	$\chi2 = 1.879$ (0.391)
Chemotherapy	8	32	5	20	
Surgery&Chemotherapy	5	20	9	36	
Presence of stoma					
Yes	8	32	8	32	$\chi2 = 0.000$ (1.000)
No	17	68	17	68	
Family history					
Yes	2	8	3	12	$\chi2 = 0.222$ (0.637)
No	23	92	22	83	

Figure (1): shows the body mass index (BMI) among the studied older sample in both groups. It was noticed that, 48% and 52% of the study and control group respectively, were overweight, 24% and 16% of the study and control group respectively, had normal weight. While obesity constituted 20% of the study and control group and only 8% of the study group and 12% of the control group were under weight. There was no significant difference between the two groups (P=0.887).

Table (3) shows socio-demographic characteristics of the studied family caregivers in both groups. The age of the study group ranged from 20 to 45 years with amean age 31.48± 7.43 for the stydy and 35.60± 8.73 for control group, Females were more prevalent in the studied family caregivers. The majority were the son or daughter of the older patients. The difference between study and control group was not statistically significant.

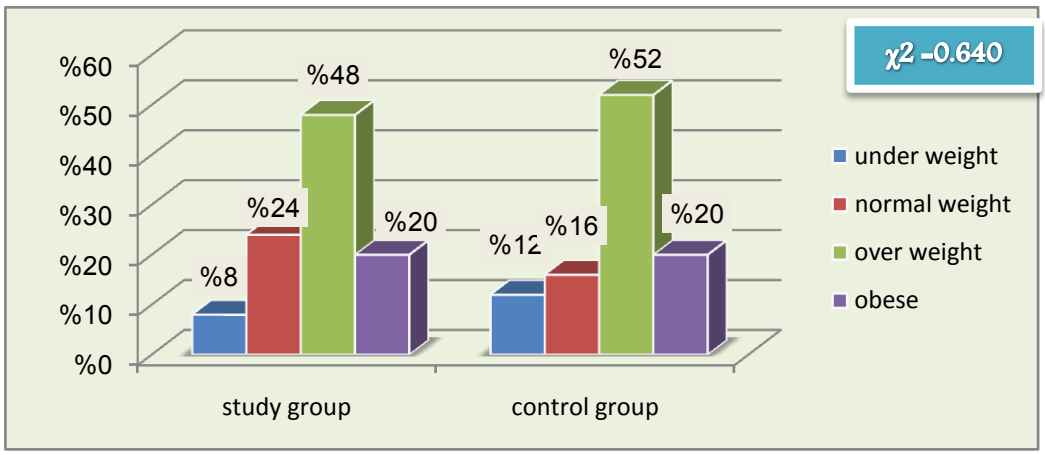

Figure (1): The body mass index (BMI) among the studied older sample in both groups

Table (3): Socio-demographic characteristics of the studied family caregivers in both groups

Item	Study group		Control group		Test of significance
	No (25)	(%)	No (25)	(%)	
Age					
18<30yaers	9	36	7	28	χ2 = 2.404 (0.301)
30<45years	14	56	12	48	
45 years and more	2	8	6	24	
Mean ± SD	31.48± 7.43		35.60± 8.73		t = -1.795 (0.079)
Sex					
Male	11	44	10	40	χ2 = .082 (0.774)
Female	14	56	15	60	
Marital status					
Single	8	32	7	28	χ2 = 2.097 (0.553) ^
Married	17	68	16	64	
Widow	0	0	1	4	
Divorced	0	0	1	4	
Education level					
Secondary	11	44	13	52	χ2 = 1.207 (0.547) ^
University	13	52	12	48	
Postgraduate	1	4	0	0	
Occupation					
Employee	6	24	6	24	χ2 = 3.295 (0.856) ^
Housewife	5	20	9	36	
Student	5	20	2	8	
Craftsman	2	8	1	4	
Driver	1	4	2	8	
Shop owner	3	12	2	8	
Salesperson	1	4	1	4	
Nurse	2	8	2	8	
Caregiver relation to older adult					
Son / daughter	20	80	18	72	χ2 = 639 (0.959)
Daughter's / son's wife	1	4	1	4	
Brother /sister	2	8	3	12	
Grandchild	1	4	1	4	
Daughter of sister/brother	1	4	2	8	

- Student t-test - Pearson Chi-Square χ2 test - ^ P value based on Monte Carlo exact probability

Figure (2) shows percentage of caregivers' knowledge before and after training. It reveals thatthere was poor knowledge before training which increased immediately and post 1 (6 weeks) after training and slightly decrease in post 2(12 weeks).

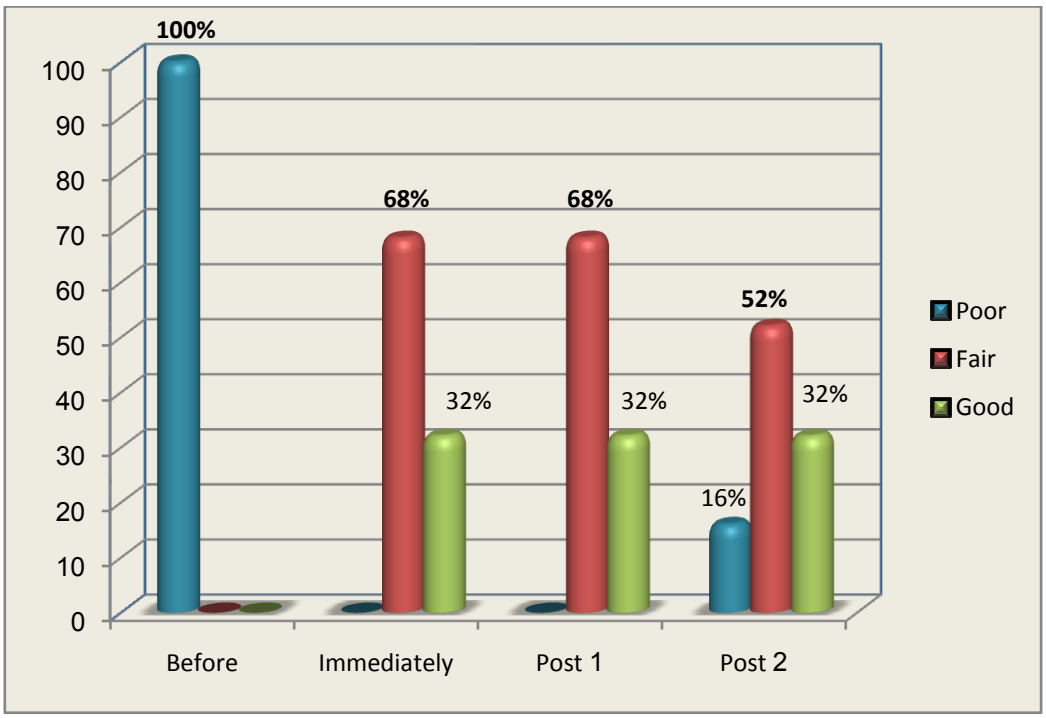

Figure (2): Percentage of caregivers' knowledge before and after training

Figure (3) shows percentage of caregivers' practice before and after training. It reveals thatthere was poor practice before training which improved immediately and post 1(6 weeks) after training and continue to improve in post 2(12 weeks).

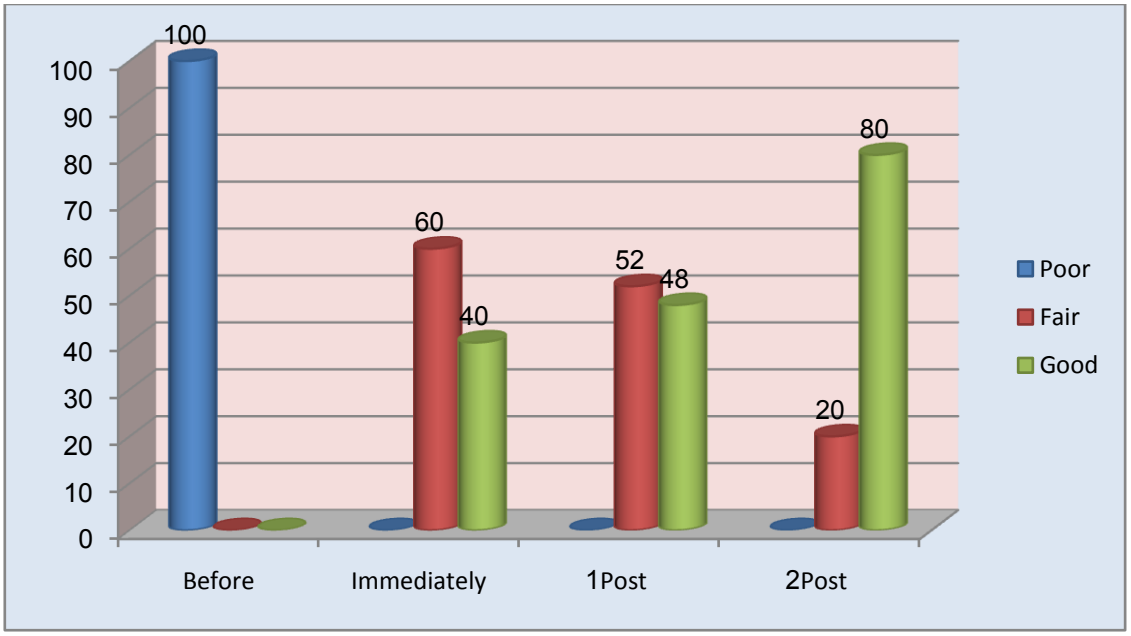

Figure (3): Percentage of caregivers' practice before and after training

Table (4) shows effect of family caregivers' reflexology training on their knowledge and practice score in the studied groups. It reveals thatthere was statistical significant improvement regarding the total score knowledge and practice in the study group

Table (4):Effect of family caregivers' reflexology training on their knowledge and practice score in the studied groups

Item	Study group	Control group	Test of significance P=
	Mean ± SD	Mean ± SD	
Knowledge			
Before training	1.52±2.25	0.60± 1.50	t = 1 .698 (0.096)
Immediately after training	45.08±7.75	1.12±2.35	t = 27.137 (0.000)**
T-test (P)[1]	34.221(0.000)**	2.177 (0.040)*	
After 6 weeks	42.04±8.27	2.76±3.70	t = 21.658 (0.000) **
T-test (P)[2]	29.139(0.000)**	3.747 (0.001) **	
After 12 weeks	39.16±9.43	4.32±5.09	t = 16.242 (0.000) **
T-test (P)[3]	23.080(0.000)**	4.137(0.000)**	
Practice			
Before training	1.64±2.94	0.52±1.29	t = 1.742 (0.088)
Immediately after training	29.56±4.66	0.92±2.19	t = 27.774 (0.000)**
T-test (P)[1]	35.756(0.000)**	2.089 (0.047)*	
After 6 weeks	30.08±4.49	3.60±4.78	t = 20.153 (0.000)**
T-test (P) [2]	37.122 (0.000)**	3.647 (0.001)**	
After 12 weeks	31.16±4.08	4.04±4.87	t = 21.304 (0.000)**
T-test (P) [3]	41.186 (0.000)**	4.019 (0.001) **	

Paired –sample t-test (p) 1: comparing pre training and immediately after in study group.
Paired –sample t-test (p) 2: comparing pre training and after 6 weeks in study group.
Paired –sample t-test (p) 3: comparing pre training and after 12 weeks in study group.

Table (5) shows health status of the studied older sample before and after caregivers' training. It appears from the table that, all dimensions of health status did not show any statistically significant differences between study and control groups before implementing caregivers training while; the differences between the two groups were statistically significant at both 6and 12 weeks (post 1 & post 2) after the training for all dimensions of health status.

Table (5):Health status of the studied older sample before and after caregivers' training

Health status items [#] SF-36	Study group(N=25)			Control group(N=25)			t-test		
	Before	After 6 wks	After 12wks	Before	After 6 wks	After12wks	P1	P2	P3
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD			
Physical function	39.8 ±11.409	51.80±11.07	76.00±8.03	39.40±11.66	36.20±6.50	43.00±8.03	0.123 (0.903)	9.419 (0.000)**	14.518 (0.000)**
P[a]	10.082 (0.000)**			-1.713 (0.100)					
P[b]	17.180 (0.000)**			2.518 (0.019) *					
Role limitation physical	19.00±19.47	40.00±14.43	65.00±17.67	24.60±23.58	16.00±18.92	27.00±20.31	-0.916 (0.364)	6.834 (0.000)**	7.499 (0.000)**
P[a]	7.584 (0.000)**			-3.280 (0.003)*					
P[b]	14.732 (0.000)**			0.549 (0.588)					
Role limitation emotional	23.97±26.36	50.61±16.97	73.29±23.58	21.32±34.52	15.98±27.40	18.65±27.33	0.305 (0.761)	5.370 (0.000)**	7.567 (0.000)**
P[a]	9.798(0.000)**			-1.282 (0.212)					
P[b]	12.635(0.000)**			-0.571 (0.573)					
Energy /Fatigue	32.00±8.03	49.72±7.79	69.80±9.73	37.20±12.08	35.00±10.20	42.40±8.55	-1.792 (0.079)	5.732 (0.000)**	10.572 (0.000)**
P[a]	11.563 (0.000)**			-1.235 (0.229)					
P[b]	17.486 (0.000)**			3.501 (0.002)*					
Emotional wellbeing	42.18±12.86	55.36±10.56	68.04±10.77	39.84±12.24	38.88±12.13	37.64±9.53	0.659 (0.513)	5.122 (0.000)**	10.564 (0.000)**
P[a]	-8.861 (0.000)**			1.809 (0.083)					
P[b]	-6.734 (0.000)**			1.925 (0.066)					
Socialfunctioning	33.40±16.48	43.60±15.66	59.30±12.83	33.86±22.54	27.18±16.21	29.50±16.73	-0.082 (0.935)	3.641 (0.001)**	7.063 (0.000)**
P[a]	4.787(0.000)**			-2.527 (0.018)					
P[b]	12.821 (0.000)**			-1.121 (0.273)					

Pain	32.10±12.26	51.70±9.62	68.86±7.99	36.70±13.80	38.20±9.93	46.00±8.69	-1.246 (0.219)	4.881 (0.000)**	9.678 (0.000)**
P[a]	12.518(0.000)**			0.702 (0.489)					
P[b]	19.810 (0.000)**			4.850 (0.000)**					
General health	40.28±12.28	48.92±13.16	62.90±12.32	44.88±10.93	42.44±8.23	45.28±7.81	-1.398 (0.168)	2.087 (0.042)*	6.036 (0.000)**
P[a]	4.923(0.000)**			-1.466 (0.156)					
P[b]	12.293(0.000)**			0.249 (0.805)					

Paired t-test (P) [a]:Comparing before and 6 weeks after the intervention in each group.
Paired t-test (P) [b]: Comparing before and 12 weeks after the intervention in each group.
Student t-test (P1): Comparing study and control group before the intervention
Student t-test (P2): Comparing study and control group 6 weeks after the intervention
Student t-test (P3): Comparing study and control group 12 weeks after the intervention
*the difference is statistically significant at p≤0.05
[#] SF-36 Health Survey Questionnaire **(**increasedscores denote improvement).

Figure (4) illustrated total score of health status of the studied older sample before and after caregivers' training. It illustrate that there was no statistical significant difference between study and control groups before implementing caregivers' training (P=0.572) while; the differences between the two groups were statistically significant at both 6and 12 weeks (Post 1& Post 2) after the training for total health status score (P=0.000).

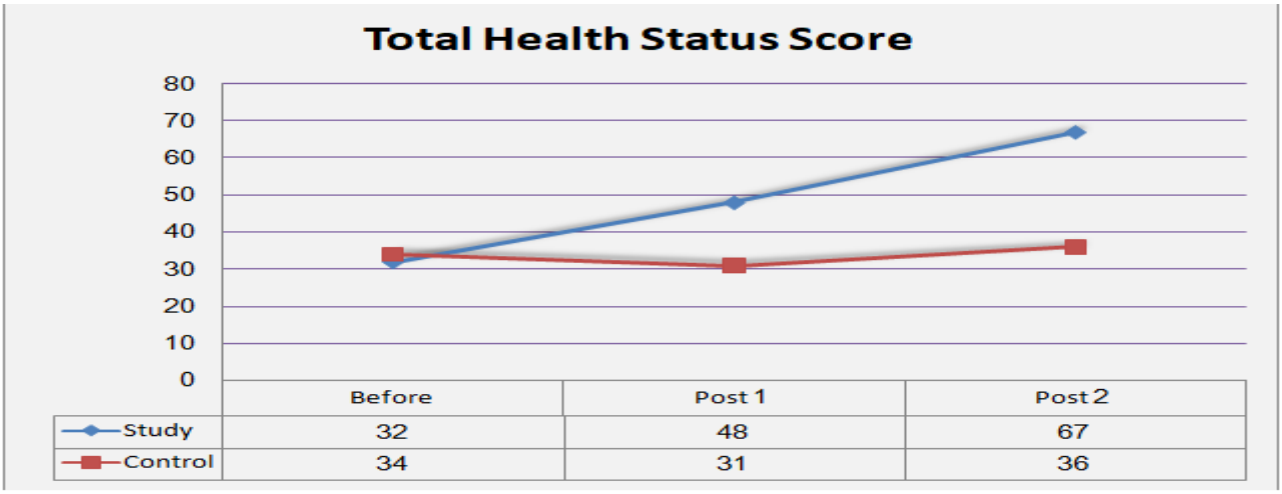

Figure (4): Total score of health status of the studied older sample before and after caregivers' training.

Table (6) illustrates anxiety, depression and symptoms distress of the studied older sample before and after caregivers' training. It should be pointed out that, total mean scores did not show any statistically significant differences between study and control groups before training while, the differences between the two groups were statistically significant at both 6 and 12 weeks (post1& post2) after training for the anxiety, depression and symptoms distress score (P= 0.000).

Table (6): Anxiety, depression and symptoms distress among the studied older sample before and after caregivers' training

Item	Study group (N=25)			Control group (N=25)			t-test		
	Before intervention	After 6 weeks	After 12 weeks	Before intervention	After 6 weeks	After 12 weeks	P1	P2	P3
Anxiety(HADS) [#]									
Mean ± SD	14.72±3.43	11.76±2.77	9.04±1.64	14.20±3.78	14.56±3.44	14.08±3.36	0 .509 (0.613)	3.168 (0.003)*	6.727 (0.000)**
P[a]	10.580 (0.000)**			1.565 (0.131)					
P[b]	12.044 (0.000)**			0.299 (0.768)					
Depression(HADS) #									
Mean ± SD	14.04±3.75	12.24±3.12	11.00±2.84	13.52±3.70	14.04±3.25	13.68±3.31	0.492 (0.625)	-1.993 (0.052)	3.069 (0.004)*
P[a]	8.050 (0.000)**			2.008 (0.056)					
P[b]	9.867 (0.000)**			0.342 (0.735)					
Symptoms distress (MSAS)#									
Mean ± SD	3.14±0.35	2.19±0.45	1.10±0.32	2.93±0.37	2.99±0.33	2.74±0.42	1.995 (0.06)	7.00 (0.000) **	-15.39 (0.000)**
P[a]	12.21 (0.000)**			-0.874 (0.391)					
P[b]	26.53 (0.000) **			4.261(0.000) **					

Paired t-test (P) [a]:Comparing before and 6 weeks after the intervention in each group.
Paired t-test (P) [b]: Comparing before and 12 weeks after the intervention in each group
Student t-test (P1): Comparing study and control group before the intervention
Student t-test (P2): Comparing study and control group 6 weeks after the intervention
Student t-test (P3): Comparing study and control group 12 weeks after the intervention
*the difference is statistically significant at p≤0.05
HADS: Hospital Anxiety and Depression Scale (decreased scores denotes improvement)
#MSAS: Memorial Symptom Assessment Scale (decreased scores denotes improvement)

Figure (5) shows correlation between total knowledge score and total practice score of the study group. The table demonstrates that there was strong, positive significant correlation between total knowledge score and total practice score.

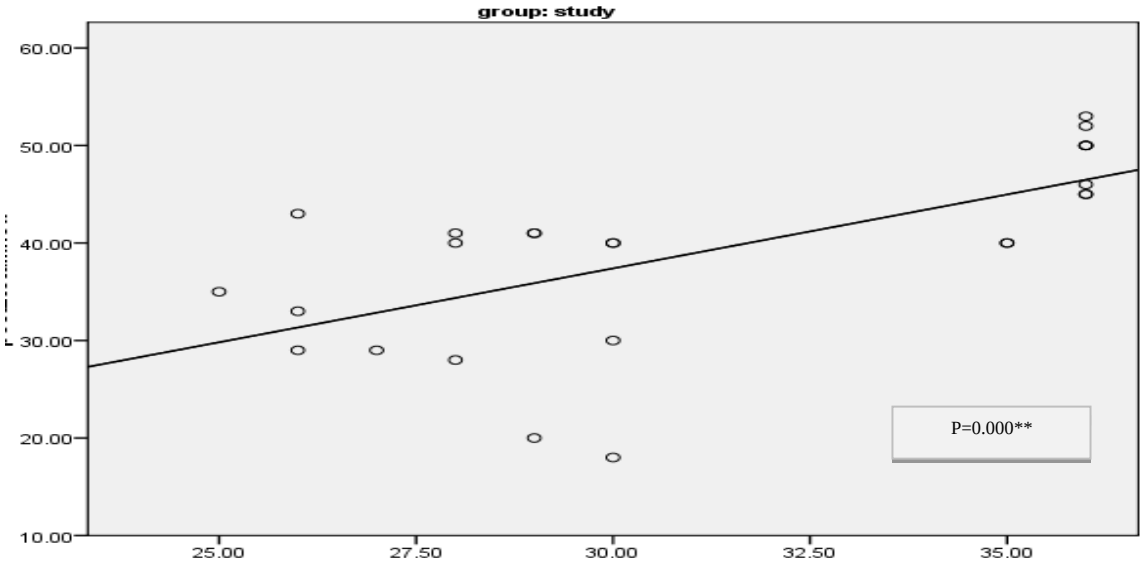

Figure (5):Correlation between total knowledge score and total practice score

DISCUSSION

Aging is considered one of the main risk factors for developing colorectal cancer (CRC) **[25].** This study revealed that the mean age of the studied elderlywas 65.92±6.42 and 67.08±7.08 in the study and control group respectively. This may be related to the age incidence of CRC in Egyptian patients is much younger than reported in the west **[26]**. The finding in accordance with that of other studies carried outin Egyptby **Hokkam et al., (2013)**[27]in which mean age was 61.6 ± 8.2 years, **El-Moselhy et al., (2017)** [28] who cleared that the age at diagnosis of CRC was 35% in age groups ≥60 year.

Contrary to a common belief that CRC affects mainly men, females were slightly more prevalent than males in this study. This unequal gender distribution with age may be due to the difference in lifespan among males and females. This result supported by the study done by**Majek et al., (2013)**[29] and**Quirtet al., (2017)** [30] who reported improved survival of female CRC patients compared to male patients. This finding was in contrast with studies conducted in Egypt by **Sakr et al., (2016)** [31],**Balbola (2016)** [32],and**Zekri et al., (2016)** [33].
Furthermore, obesity is a major risk factor for CRC in men and women[34]. This study revealed that 20% of elderly patients were obese and about half in the study group and more than half in the control group were overweight. This may be due to obese people tending to have chronic, low levels of inflammation, which can lead to DNA damage and cancer and they are more likely to have other health conditions associated with inflammation, such as ulcerative colitis, an inflammatory bowel condition that is also a risk factor for CRC, regardless of weight. This result in line with other studies carried outin Egypt by **Mahfouz et al., (2014), El-Moselhy et al., (2017)** [28] **, El-taher et al., (2016)** [35] which revealed that overweight/obesity was significant risk factor for CRC. In contrast, **Luo et al., (2015)** [36] found that colorectal cancer cases had a lower mean BMI than controls.

According to literature and epidemiological studies conducted in Egypt by**Gado, et al. (2014)** [37] **, El-Moselhy et al., (2017)**[28] **,** in Japan by **Yoshino etal., (2016)**[38] and**Kennedyet al., (2016)**[39] , which showed that the most common site of tumor was the colon. This is in accordance with the findings in the present study which revealed that the majority of studied subjects had suffered from colon cancer. Moreover, the most common presenting symptom of CRC in the present study was bleeding per rectum. The same result was reported in several studies in Egypt by**, Gado et al., (2014)** [37] **,Esmail (2015)**[40] **, Balbola (2016)**[32] and **El-Moselhy et al., (2017)**[28] .
The majority of the studied family caregivers in the present study were middle age (30-45 years)with a mean age of 31.48±7.43 for the study group and 35.60±8.73 for the control group. This finding points toward the fact that middle age groups are assigned the role of caregivers more often. Similar result reported by**Mohamed (2016)** [41]and**Alsirafyet al., (2016)**[42].

According to the results of several studies, approximately 55-80% of family caregivers were female **(Asiedu et al., 2014**[43]**, Lkhoyaaliet al., 2015**[44]**, Lukhmana et al., 2015**[45]**, Alsirafyet al., 2016**[42]**,** and**Mosher et al., 2016**[46]**)**.

In congruent with these results, the current study also showed that more than half of the studied caregivers were females. This result may be attributed to woman in developing countries, like Egypt, undertake the task of providing care and women are usually portrayed and expected to be the main source of care and emotional support.

Sons and daughters were the most common caregivers rankings in this study. This result may be due to the presence of aged wife with chronic illness who can't provide care for the spouse and by tradition, the other family members especially daughters take responsibility for caring for elderlyowing to the thought of filial piety. The same finding was reported by another study carried out by **Elhgry (2016)**[47]in Egypt**, Nortey et al.,(2017)**[48] in Ghana and **Borges et al., (2017)**[49] in Brazil.On the other hand, the study of**Mosheret al., (2016)**[46]inIndiawhichreported that the majority of family caregivers of CRC patients were spouse or partner.

To our knowledge, this is the first study assessing knowledge and practice of family caregivers (FCs) about foot reflexology.Regarding knowledge and practice about foot reflexology before training, the findings of the present study showed poor knowledge and practice in the study and control groupwith no statistical significant difference between the two groups. Poor knowledge and practice of foot reflexology may due to unfamiliarity with this type of CAM and it is still new and unknown in developed countries, like Egypt. This result consistent with many studies done by **Abdullah Al-Rowais et al., (2012)**[50] in Saudi Arabia,**Cırık et al., (2016)**[51]in Turkey, **Jamshed et al., (2016)**[52] and **Choudhari&Jothipriya (2017)**[53]in which the majority of participant lacked knowledge and practice about reflexology.

The present study revealed a highly significant improvement in the knowledge and practice of the study group after implementation of the training sessionswith statistically significant difference between both groups. This result may be related to the effectiveness of the training program sessions which provided the caregivers with the necessary information and instructions about foot reflexology to master the technique of foot reflexology. This is in accordance with a study carried out in Saudi Arabia by**AlBedahet al., (2015)**[54]and**AlMansour et al., (2015)**[55]in which medical students' knowledge, attitude and practice toward CAM significantly improved after CAM training course.In the same line, the study of **Stephenson et al (2007)**[56],**Holmstrom et al., (2016)**[57], **Frambes et al., (2017)**[58]and **Wyatt et al., (2017)**[59] revealed that family caregivers were able to achieve foot reflexology protocol proficiency at 90% immediately after reflexology training and at the follow-up.

Unexpectedly, there was slightly improvement in knowledge and practice among those in the control group. This may be attributed to the effect of mass media which play a vital role in providing the public with information and searching the internet which become an easy way for accessing any information needed. In the same line, **El-Olemy et al.,(2017)**[60] in Egypt reported that media was the main source of CAM knowledge (TV 31.2%, and internet 13.6%).

Elderly patient with CRC in this study had poor health status (total and all dimensions of sf-36). One possible explanation for this is the more severe side effects experienced during cancer treatment and effect of aging in physiologic reserve, functional status and comorbidities. This result in the same line with another study doneby**Hokkam et al., (2013)**[27]in Egypt who showed impaired global health status of colorectal carcinoma patient, also the study of **Quach et al., (2015)**[61]revealed that elderly patients with CRC had significantly lower scores in all 8 domains of SF-36 at follow-up compared with controls.

The results of the current study revealed that after family caregivers' reflexology training, there is a highly statistical significant difference between the study and control group in the total and all dimensions of health status (SF-36). Such improvement may be due to foot reflexology itself is claimed to free the energy flow, improve blood and lymph flow, produce endorphins and return the body to a state of equilibrium. This result consistent with the study of **Somchock (2012)**[62], who provided foot reflexology to Thai older adults in which there wasstatistical significant differences in unadjusted mean of all dimensions of the SF-36.

Moreover, **Uysal et al., (2017)**[63]studied theeffects of foot massage applied in two different methods on symptom control in colorectal cancer patients, the reflexology group's mean scores of functional scale and global health status were higher than those of the classic massage and control groups, the study of**Matthewset al., (2015)**[64] that examining the effect of complementary therapies on participant's quality of life, there was a statistically significant increase in all calculated mean scores of sf-36 upon completion of the sessions.

This study revealed that a highly significant improvement among subjects in the study group after reflexology intervention and nearly the majority of them reported mild level of anxiety & depression compared to the control group where the majority of them reported worsen in anxiety and depression level with statistical significant difference between them. This result may be related to messaging reflex point of solar plexuses during foot reflexology decreases stress and anxiety with the help of a deep relaxation and an intensive relaxing in which solar plexus is highly affected by stress so releasing this reflex point has been known to decrease stress levels as well as increase the body's tolerance for stress.

Similar findings was reported by **Kimet al., (2011)**[65] in Korea in which reflexology was significantly effective in decreasing depression (P=0.001) of the female elderly at elderly homeand **Roberts et al., (2013)**[66]in UK**,** who provide complementary therapies for cancer patientsincluding reflexology, there was significant statistical differences in hospital anxiety and depression scale (HADs) between pre-post use of CAM(decreased).

Moreover, after caregivers' foot reflexology training, the present study reported significant decline in symptoms distress among patients in the study group than control group. Similar resultreported bythe study done by **Wyatt et al., (2017)**[59]in USA in which a significant reductions in average symptom severity (p=0.02) and interference (p<0.01) over 11 weeks were found in the reflexology group compared to control and by **Frambes et al., (2017)**[58] who observed a significant reduction in patient symptoms over time in the caregiver delivered reflexology group compared to controls. Furthermore,**Uysal et al., (2017)**[63] study on the effects of reflexology in colorectal cancer patients reported that; the mean symptom-scale score significantly decreased in the reflexology group.

As regard to correlation between caregivers' knowledge and practice, the present study revealed a strong positive correlation between caregivers' knowledge and practice. This finding was congruent with **El-Olemy et al (2017)**[60] in Egypt, in which participants having good knowledge about CAM were significantly associated with high use of CAM (p<0.000).

Caregiver educational program become a main priority in health care setting, the main goal such educational programs should focus on training specifics skills for the caregiver that in turn influence the wellbeing of both family caregivers and their patients[67]**.** This study has shown that an individualized approach to caregivers' reflexology training is effective in promoting health status, alleviating anxiety & depression and symptom management among older colorectal cancer patients. Finally, the hypotheses of the current study were supported by the findings after implementation of the family caregivers' training.

CONCLUSION

Foot reflexology can be safely used forelderly patients with colorectal cancer. Therefore, the implementation of family caregivers' foot reflexology training has positive effects in improving their knowledge and practice regarding foot reflexology. Furthermore, family caregivers' foot reflexology training was successful in alleviating anxiety & depression and in symptoms management which leads to improvement in health status of elderly patients with colorectal cancer.

RECOMMENDATIONS

- Implementation of awareness programs about colorectal cancer. Hence, presentation of a clear picture of the disease, its detection and more emphasis should be on the screening tests required for the prevention of disease at all levels of individual.
- Development of educational programs and training for all nurses and other health careproviders in hospitals focusing on integration of complementary and alternative therapy especially foot reflexology in oncology setting.
- Further research may also extend to assess the effectiveness of foot reflexology in geriatric care on other types of cancer or other chronic conditions.

REFERENCES

[1]. Baider L &Surbone A. Universality of Aging: Family Caregivers for Elderly Cancer Patients. Frontiers in Psychology 2014, 5, 744. http://doi.org/10.3389/fpsyg.2014.00744.

[2]. Akter KA, Mansour MA, Hyodo T, Senga T. FAM 98 Aassociates with DDX1-C14 orf166-FAM98B in a novel complex involved in colorectal cancer progression. The International Journal of Biochemistry & Cell Biology2017; 84: 1–13

[3]. Elshafei A, Shaker O, Abd El-motaal O, & Salman T. The expression profiling of serum miR-92a, miR-375, and miR-760 in colorectal cancer: An Egyptian study. Tumor Biology 2017; 39(6), 1010428317705765. https://doi.org/10.1177/1010428317705765

[4]. Boselli C, Cirocchi R, Gemini A, Grassi V, Avenia S, Polistena A, Sanguinetti A, Burattini MF, Pironi D, Santoro A, Tabola R, and Avenia N. Surgery for colorectal cancer in elderly: a comparative analysis of risk factor in elective and urgency surgery. Aging - Clinical and Experimental Research2016;e-ISSN 1720-8319.DOI 10.1007/s40520-016-0642-2

[5]. Kim SE, Paik HY, Yoon H, Lee JE, Kim N, & Sung MK (). Sex- and gender-specific disparities in colorectal cancer risk. World Journal of Gastroenterology2015; 21(17): 5167–5175. http://doi.org/10.3748/wjg.v21.i17.5167

[6]. Kuipers EJ, Grady WM, Lieberman D, Seufferlein T, Sung JJ, Boelens PG, van de Velde CJH, and Watanabe T. Colorectal Cancer. Nature Reviews. Disease Primers2015, 1, 15065. http://doi.org/10.1038/nrdp.2015.65

[7]. Tao WW, Jiang H, Tao XM, Jiang P, Sha LY, Sun XC. Effects of Acupuncture, Tuina, Tai Chi, Qigong, and Traditional Chinese Medicine Five-Element Music Therapy on Symptom Management and Quality of Life for Cancer Patients: A Meta-Analysis. J Pain Symptom Manage2016;51(4):728-47. doi: 10.1016/j.jpainsymman.2015.11.027. Epub 2016 Feb 12.

[8]. Ameade EPK, Amalba A, Helegbe GK, & Mohammed BS. Medical students' knowledge and attitude towards complementary and alternative medicine – A survey in Ghana. Journal of Traditional and Complementary Medicine2016;*6*(3): 230–236. http://doi.org/10.1016/j.jtcme.2015.03.004

[9]. Song HJ, Son H, Seo HJ, Lee H, Choi SM, Lee S. Effect of self-administered foot reflexology for symptom management in healthy persons: A systematic review and meta-analysis. Complement Therapy in Medicine2015;23(1):79-89. doi: 10.1016/j.ctim.2014.11.005. Epub 2014 Dec 9.

[10]. Evans M, Sharp D, &ShawARG. Developing a model of decision-making about complementary therapy use for patients with cancer: A qualitative study. Patient Education and Counselling2012. DOI: 10.1016/j.pec.2011.11.003

[11]. Esmel-Esmel N, Tomás-Esmel E, Tous-Andreu M, Bové-Ribé A, Jiménez-Herrera M. Reflexology and polysomnography: Changes in cerebral wave activity induced by reflexology promote N1 and N2 sleep stages.

Complementary Therapies in Clinical Practice2017;28:54-64. doi: 10.1016/j.ctcp.2017.05.003.

[12]. CloseC Sinclair M, Cullough JM, Liddle D, Hughes C. A pilot randomized controlled trail (RCT) investigating the effectiveness of reflexology for manging low back and or pelvic pain. Complementary Therapy Clinical Practice2016; 23:117-24.

[13]. Samuel &Ebenzer.Exploratory study on the efficacy of reflexology for pain threshold and tolerance using an ice-pain experiment and sham TENS control. Complementary Therapy Clinical Practice2013; 19(2): 57-62.

[14]. Wyatt D & Hulbert-Williams N. Cancer and Cancer Care. 1st ed. UK: SAGE Publication Ltd2015.

[15]. SteenkampE, Scoorby B and Van Der Walt C. Facilitating nurses' knowledge of the utilization of reflexology in adults with chronic diseases to enable informed health education during comprehensive nursing care. Health SA Gesonheid2012;17(1):1-12.

[16]. Sherif WI, Shams NM, AbdElhameed SH, Ali SM. Anxiety and Depression among Family Caregivers of Older Adults with Cancer.Journal of Education and Practice2014; 5(38):76-86.

[17]. Eliopoulos C. Gerontological Nursing. 8th ed. China: Lippincott Williams & Wilkins2014: 298.

[18]. Martín JM, Olano-Lizarraga M, Saracíbar-Razquin M. The experience of family caregivers caring for a terminal patient at home: A research review. Int J NursStud 2016; 64:1-12. doi: 10.1016/j.ijnurstu.2016.09.010. Epub 2016 Sep 14.

[19]. Frambes DA. Examining Relationships between Caregiving Activities and Caregiver Health Outcomes. Published Doctoral Thesis2016. Faculty of Nursing;Michigan State University

[20]. Ware JE and Sherbourne CD. The MOS 36-item short-form health survey (SF-36).I. Conceptual framework and item. Med Care1992; 30(6): 473-83.

[21]. Hassan BH. Comparative clinical study of non pharmacologic interventions for relieving moderate to severe knee pain in elderly patient. Doctoral Thesis2011. Faculty of Nursing; Alexandria University.

[22]. Chang VT, Hwang SS, Feuerman M, Kasimis BS, and Thaler HT. The memorial symptom assessment scale short form (MSAS-SF). PubMed Cancer2000;89(5):1162-71.

[23]. Zigmond A, Snaith R. The Hospital Anxiety and Depression Scale. ActaPsychiatricaScandinavica1983; 67: 361-70.

[24]. AbdElhameed SH. Caregivers training and health status outcomes in cerebral stroke elder patients. Published Doctoral Thesis2010. Faculty of Nursing. Alexandria University.

[25]. Decoster L, Vanacker L, Kenis C, Prenen H, Van Cutsem E, Van Der Auwera J, Van Eetvelde E, Van Puyvelde K, Flamaing J, Milisen K, Lobelle JP, De Grève J, Wildiers. Relevance of Geriatric Assessment in Older Patients With Colorectal Cancer. Clinical Colorectal Cancer 2016. https://doi.org/10.1016/j.clcc.2016.07.010

[26]. Eisa HA. Colorectal Cancer in Upper Egypt, Does Age Make A Difference in Survival ?. The Medical Journal of Cairo University2010; 78 (2): 145-50.

[27]. Hokkam E, Farrag S, El Kammash S, and Faisal M. Assessment of quality of life of colorectal carcinoma patients after surgery.World Journal of Colorectal Surgery2013; 3(1): 1-18.

[28]. El-Moselhy E A, Hassan A M, El-Tiby D M, Abdel-Wahed A, Mohammed A S, and Abd El-Aziz A. Colorectal cancer in egypt: clinical, life-style, and socio-demographic risk factors.Peer Reviewed Academia Sciences2017. Available at:http://pras.org/articles/colorectal-cancer-in-egypt-clinical-lifestyle-and-sociodemographic-risk-factors. Last accessed on 21 May 2017.

[29]. Majek O, Gondos A, Jansen L, Emrich K, Holleczek B, Katalinic A, Nennecke A, Eberle A, Brenner H; GEKID Cancer Survival Working Group. Sex differences in colorectal cancer survival: population-based analysis of 164,996 colorectal cancer patients in Germany. PLoS One2013;8(7):e68077. doi: 10.1371/journal.pone.0068077.

[30]. Quirt JS, Nanji S, Wei X, Flemming JA, & Booth CM. Is there a sex effect in colon cancer? Disease characteristics, management, and outcomes in routine clinical practice. Current Oncology 2017; 24(1): e15–e23. http://doi.org/10.3747/co.24.3410.

[31]. Sakr SA, Abdel-Wahed MM, Abdou AG, El-Adely EK. Histochemical alterations in colorectal carcinoma and adenoma in Egyptian patients. Journal of Coastal Life Medicine2016; 4(1): 14-20.

[32]. Balbola MMM. Rectal Cancer in Egyptian Patients under 45 Years: A Clinical Description with Pathological Reference. Published Master thesis2016.National Cancer Institute. Cairo University.

[33]. Zekri ARN, Youssef ASED, Lotfy MM, Gabr R, Ahmed OS, Nassar A, Hussein N, Omran D, Medhat E, Eid S, Hussein MM, Ismail MY, Alenzi FQ and Bahnassy A A. Circulating Serum miRNAs as Diagnostic Markers for Colorectal Cancer. PLoS ONE 2016;11(5): e0154130.http://doi.org/10.1371/journal.pone.0154130

[34]. Rojas-Puentes L, Garza-Salazar JG, Calderillo-Ruíz G, Lino-Silva LS, Vidal-Millán S, Reynoso-Noverón N, Meneses-García A, la Vega HA, and Ruiz-García E. Increased Incidence of Colorectal Cancer in Young People (Less Than 40 Years Old) Over the Last Ten Years. Journal of Cancerology2014; 1: 16-22.

[35]. El-taher SM, Alenezy A, Salama BMM and Hassan TMM. Risk Factors of Colorectal Cancer; A Case-Control Study. The Egyptian Journal of Community Medicine2016; 34(1):1-15.

[36]. Luo WP, Fang YJ, Lu MS, Zhong X, Chen YM, and Zhang CX. High consumption of vegetable and fruit color groups is inversely associated with the risk of colorectal cancer: a case-control study. British Journal of Nutrition2015; 113(7): 1129-38.

[37]. Gado A, Ebeid, B, Abdelmohsen A, & Axon A. Colorectal cancer in Egypt is commoner in young people: Is this cause for alarm? Alexandria Journal of Medicine2014; 50(3):197–

201.https://doi.org/https://doi.org/10.1016/j.ajme.2013.03.003.

[38]. Yoshino T, Nakase H, Takagi T, Bamba S, Okuyama Y, Kawamura T, Oki T, Obata H, Kawanami C, Katsushima S, Kusaka T, Tsujikawa T, Naito Y, Andoh A, Kogawa T. Risk factors for developing colorectal cancer in Japanese patients with ulcerative colitis: a retrospective observational study—CAPITAL (Cohort and Practice for IBD total management in Kyoto-Shiga Links) study I. BMJ Open Gastroenterology 2016; 3(1): e000122. http://doi.org/10.1136/bmjgast-2016-000122

[39]. Kennedy AS, Ball DS, Cohen SJ, Cohn M, Coldwell D, Drooz AEhrenwald E, Kanani S, Rose SC, Nutting CW, Moeslein FM, Savin MA, Schirm S, Putnam SG, Sharma NK, Wang EA. Safety and Efficacy of Radioembolization in Elderly (≥ 70 Years) and Younger Patients With Unresectable Liver-Dominant Colorectal Cancer. Clinical Colorectal Cancer 2016, 15(2), 141–151.e6. https://doi.org/http://dx.doi.org/10.1016/j.clcc.2015.09.001

[40]. Esmail MAS. Fast-track colorectal surgery. Unpublished Master Thesis2015. Faculty of Medicine. Mansoura University.

[41]. Mohamed MA. Effect of Psychological Aspects and care Burden on Quality of Life among Caregivers of Cancer Patients. Master thesis2016. Faculty of Nursing. Assiut University

[42]. Alsirafy SA, Abdel-Kareem SS, Ibrahim NY, Abolkasem MA, Farag DE. Cancer diagnosis disclosure preferences of family caregivers of cancer patients in Egypt. Psychooncology2016;1:5doi: 10.1002/pon.4206. [Epub ahead of print]

[43]. Asiedu GB, Eustace RW, Eton DT, &RadeckiBreitkopf C. Coping with colorectal cancer: a qualitative exploration with patients and their family members. Family Practice 2014; 31(5): 598–606. http://doi.org/10.1093/fampra/cmu040

[44]. Lkhoyaali S, Haj MA El, OmraniFEl, Layachi M, Ismaili N, Mrabti H, &Errihani H. The burden among family caregivers of elderly cancer patients: prospective study in a Moroccan population. BMC Research Notes2015; 8(1): 347. https://doi.org/10.1186/s13104-015-1307-5

[45]. Lukhmana S, Bhasin S K, Chhabra P, Bhatia M S. Family caregivers' burden: A hospital based study in 2010 among cancer patients from Delhi. Indian J Cancer2015;52:146-51

[46]. Mosher CE, Adams RN, Helft PR, O'Neil BH, Shahda S, Rattray NA, & Champion V L. Family Caregiving Challenges in Advanced Colorectal Cancer: Patient and Caregiver Perspectives. Supportive Care in Cancer : Official Journal of the Multinational Association of Supportive Care in Cancer 2016; 24(5): 2017–2024. http://doi.org/10.1007/s00520-015-2995-z

[47]. Elhgry GMA. Home Discharge Intervention for Elderly Patients' Caregivers after Stroke. Unpublished doctoral Thesis 2016. Menoufia University. Faculty of Nursing.Community Health Nursing.

[48]. Nortey ST, Aryeetey GC, Aikins M, Amendah D, &Nonvignon J. Economic burden of family caregiving for elderly population in southern Ghana: the case of a peri-urban district. International Journal for Equity in Health 2017; 16: 16. http://doi.org/10.1186/s12939-016-0511-9.

[49]. Borges, EL, Franceschini J, Costa L H D, Fernandes A L G, Jamnik S, & Santoro I L. Family caregiver burden: the burden of caring for lung cancer patients according to the cancer stage and patient quality of life .JornalBrasileiro de Pneumologia 2017; 43(1): 18-23.

[50]. Abdullah Al-Rowais N, Al Bedah AM, Khalil MK, El Olemy AT, Khalil AA, Alrasheid MH, Al Khashan H, Al Yousef M, Abdel Razak Ba Fart A. Knowledge and attitudes of primary health care physicians towards complementary and alternative medicine in the Riyadh region, Saudi Arabia. ForschKomplementmed2012; 19(1):7-12. doi: 10.1159/000335814. Epub 2012 Feb 2.

[51]. Cırık, V, Efe E, Öncel S, &Gözüm S. Experiences and Attitudes of Nurses Regarding Complementary Health Approaches Used by Themselves and Their Patients. Journal of Transcultural Nursing 2016; 28(4): 381–390. https://doi.org/10.1177/1043659616651 67.

[52]. Jamshed SQ, Khan MU, Ahmad A, &Elkalmi RM. Knowledge, perceptions, and attitudes toward complementary and alternative medicines among pharmacy students of a Malaysian Public University. Journal of Pharmacy &Bioallied Sciences2016; 8(1): 34–38.http://doi.org/10.4103/0975-7406.171686.

[53]. Choudhari S and Jothipriya. Knowledge and attitude of dental students towards complementary and alternative medicine. International Journal of Pharmacy & Technology2017; 9 (2): 29759-29765.

[54]. AlBedah A, Khalil M, AlQaed M, Qureshi N, ElOlemy A, ElSubai I, &khalil AA. The effect of introducing Complementary medicine course in the curricula of undergraduate medical students on changing the attitudes towards CAM. Integrative Medicine Research 2015; 4(1):112.https://doi.org/10.1016/j.imr.2015.04.199.

[55]. Al Mansour MA, Al-Bedah AM, AlRukban MO, Elsubai IS, Mohamed E Y, El Olemy AT, Khalil AA, Khalil MK, Alqaed MS, Almudaiheem A, Mahmoud WS, Medani KA, and Qureshi NA. Medical students' knowledge, attitude, and practice of complementary and alternative medicine: a pre-and post-exposure survey in Majmaah University, Saudi Arabia. Advances in Medical Education and Practice 2015; 6: 407–420. http://doi.org/10.2147/AMEP.S82306

[56]. Stephenson NL, Swanson M, Dalton J, Keefe FJ, Engelke M. Partner-delivered reflexology: effects on cancer pain and anxiety. Oncology Nursing Forum2007;34(1):127-32.

[57]. Holmstrom A J, Wyatt GK, Sikorskii A, Musatics C, Stolz E, Havener N. Dyadic Recruitment in Complementary Therapy Studies: Experience From a Clinical Trial of Caregiver-Delivered Reflexology. ApplNurs Res 2016; 29: 136-139.

[58]. Frambes D, Sikorskii A, Tesnjak I, Wyatt G, Lehto R, and Given B. Caregiver-Reported Health Outcomes: Effects of Providing Reflexology for Symptom Management to Women with Advanced Breast Cancer. Oncology Nursing Forum2017; 44 (5): A1–A10.

[59]. Wyatt G, Sikorskii A, Tesnjak I, Frambes D, HolmstromA, Luo Z, Victorson D, Tamkus D. A Randomized Clinical Trial of Caregiver-delivered Reflexology for Symptom Management during Breast Cancer Treatment.J Pain Symptom Manage2017; pii: S0885-3924(17)30301-9.doi: 10.1016/j.jpainsymman.2017.07.037. [Epub ahead of print]

[60]. El-Olemy AT, Radwan NM, Dawoud WM, Zayed HA, Ali EA, Elsabbagh H, Al-Dossari DS, Salem SO and Qureshi NA. Medical Students' Knowledge, Attitude and Practice towards Traditional and Complementary Medicine, Tanta City, Gharbiyah Governorate, EgyptJournal of Complementary and Alternative Medical Research2017; 3(1): 1-10.

[61]. Quach C, Sanoff H K, Williams G R, Lyons JC and Reeve BB. Impact of colorectal cancer diagnosis and treatment on health-related quality of life among older Americans: A population-based, case-control study. Cancer2015, 121: 943–950. doi:10.1002/cncr.29125

[62]. Somchock J. Effect of foot reflexology on pain reduction in older Thai people. Published doctoral thesis. School of Nursing and Midwifery2012. Flinders University. Adelaide, Australia

[63]. Uysal N, Kutlutürkan S, Uğur I. Effects of foot massage applied in two different methods on symptom control in colorectal cancer patients: Randomised control trial. Int J NursPract2017 ;23:e12532. https://doi.org/10.1111/ijn.12532.

[64]. Matthews, M., Glackin, M., Hughes, C., & Rogers, K. M. A. Who accesses complementary therapies and why? An evaluation of a cancer care service. Complementary Therapies in Clinical Practice 2015; 21(1): 19–25. https://doi.org/10.1016/j.ctcp.2014.09.005

[65]. Kim CS, Hong SH, Kim SR, Kim YJ. The Effects of Foot Reflexology on Sleep, Depression and Skin Temperature of the Female Elderly at Home. J Korean Acad Community Health Nurs2011; 22(4):409-419.

[66]. Roberts D, Wilson C, Todd C, Long AF, Mackereth P, Stringer J, Carter A, Parkin S, Caress A. Complementary therapies in cancer: Patients' views on their purposes and value pre and post receipt of complementary therapy—A multi-centre case study. European Journal of Integrative Medicine2013; 5 (5): 443-49.

[67]. Reigada C,Pais-Ribeiro JL, Novellas A. Educational Programs for Family Caregivers in Palliative Care: A Literature Review. J Palliat Care Med 2014; 4:195. doi:10.4172/2165-7386.1000195.