Mindfulness Based Intervention Program on Stress Reduction among the Elderly with Colorectal Cancer

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Abstract

Background: Mindfulness based intervention program offers an effective way of reducing stress among elderly with colorectal cancer. **Aim**: This study aimed to evaluate the effect of mindfulness based intervention program on stress reduction among elderly with colorectal cancer. **Design**: Quasi experimental design was utilized in this study. **Setting**: This study was conducted on oncology institution and outpatient clinic of Sohag University Hospitals. **Sample**: Purposive sample was used in this study included 327 elderly. **Tools**: Two tools were utilized to collect data. Tool I: A structured interview questionnaire. It was consisting of three parts: demographic characteristics of the elderly, medical history and knowledge. Tool II: Part I: Mindful attention awareness scale. Part II: Perceived stress scale. **Result**: 10% of elderly had good total knowledge pre intervention program, improved to 90% post implementation of intervention program, 50% of elderly had high stress in the last month pre intervention program improved to 70% of elderly had low stress in the last month post intervention program, 30% of elderly had high mindful attention awareness pre intervention program improved to70% of elderly had high Mindful Attention Awareness post intervention program. **Conclusion:** The results of the present study suggest the effectiveness of mindfulness based intervention program on reduction of stress level in colorectal cancer elderly. **Recommendation**: Continuous education program for all elderly about effect of mindfulness based intervention program on stress reduction for elderly with colorectal cancer.

Key words: **Colorectal cancer, mindfulness based intervention program, nursing, stress**

Introduction

Colorectal cancer is one of the leading causes of cancer-related deaths worldwide. As society ages, the number of elderly. The global burden of colorectal cancer (CRC) has been rising rapidly with population growth, changes in demographics and lifestyle habits. It was estimated to have 18.1 million new cancer cases, and 9.6 million deaths caused by cancer in year 2018. CRC is the third commonest diagnosed cancer and the second leading cause of cancer-related mortality. According to the World Health Organization (WHO), there are 1,849,518 estimated new CRC cases and 880,792 CRC-related deaths in 2018 **(World Health Organization, 2019).**

In early stages, colorectal cancer may not manifest any symptoms. As the disease advances, presenting with varying symptoms depending on the site of cancer in the colon or rectum. Symptoms are most often changes in stool caliber, followed by gastrointestinal bleeding, abdominal pain, and constipation in elderly. Symptoms are slightly different in those 80 years and older. Weight loss is more common in this age, and presenting symptoms are predominantly changes in stool caliber followed by abdominal cramping and pain, decrease appetite and gastrointestinal bleeding that lead to anemia, elderly may have abdominal obstruction **(Mouchli, 2018).**

Colorectal cancer (CRC) is acknowledged as a source of stress for many individuals, often leading to suffering, which can be long-lasting. Mindfulness Based Intervention Program (MBIP) offers an effective way of reducing stress among elderly by combining mindfulness meditation and breathing exercises and relaxation exercises in an 8-week training program **(Rush & Sharma, 2017).** Mindfulness-based stress reduction (MBSR) is moment to moment awareness is meaningful for many cancer patients who often possess anxiety about the past and the future. (MBSR) has shown positive effects on quality of life and decreased stress symptoms in patients with colorectal cancer. An idea that is extremely significant with regard to cancer care. Continuous stress may lead to unproductive rumination and worry that consumes energy, reinforces the experience of stress itself, and often fuels depression and anxiety. Mindfulness-based stress reduction techniques have demonstrated positive effects on mood, sleep, and physiological markers among cancer patients who have completed treatment. For example, MBSR has been found to have positive effects on the moods and symptoms of stress among cancer patients both

immediately following and 6 months after completing the MBSR course **(rush &sharma, 2017)**

Colorectal Cancer diagnosis, treatment, and survivorship can all be extremely stressful. Geriatric nurse have imported role in stress reduction and colorectal cancer management. Stress has been shown to affect colorectal cancer emergence, progression, and metastasis, nurse mange elderly stress through changing bodily tension and physiological activation through physical techniques such as muscle relaxation training, deep breathing .Others work by increasing awareness and developing a non-judgmental attitude toward stressful thoughts via mindfulness techniques, frequent observation and monitoring for elderly health status **(Antoni, 2019).**

Geriatric nurses have important role in health care team, having knowledge and assessing elderly, gather data about elderly include personal and family history, using evidence-based guidelines. There should be regular assessment of elderly needs, provision of information and support, symptom control, screening for colorectal cancer, can influence in decreasing the morbidity and mortality associated with colorectal cancer .In addition, the harmony between the oncology care team including nurses and pharmacists and patients is crucial for effective side effect management of chemotherapy for colorectal cancer **(Kamberi, 2020).**

Significance of the study:

The incidence of colorectal cancer has increased in recent years especially among elderly. In Egypt, colorectal cancer is the 7th commonest cancer, representing 3.47% of male colorectal cancers and 3% of female colorectal cancers. Also the estimated number of colorectal cancer cases in 2018 was slightly more than three thousand (**Metwally et al., 2018).**

Colorectal cancer is one of the diseases with a high psychological impact. This condition can be assessed as stressful because it involves loss and threat. While it is known that psychological factors such as stress and depression adversely affect the quality of life and daily functioning of cancer patients they have also been shown to negatively affect physiological processes leading to ill health **(Katsidzira et al., 2018).**

Approximately 70% Colorectal Cancer (CRC) cases are sporadic cases which were influenced by environmental factors including family history, dietary habits, physical activity, smoking and alcohol consumption. About 25% of the colorectal cancer cases have a genetic predisposition, and 5% of CRC patients have inherited factors associated with its development. Family history of CRC and the presence of common chronic conditions, such as metabolic syndrome and fatty liver **(World Cancer Research Fund, 2019)**.

Aim of the study

The aim of this study is to evaluate the effect of mindfulness based intervention program on stress reduction among elderly with colorectal cancer through the following objectives:

1- Assessing knowledge of the elderly about colorectal cancer.

2- Planning and implementing and evaluating the effect of intervention program on stress reduction among elderly.

Research hypothesis

Mindfulness based intervention program will have positive effect on improving knowledge and reduce stress among elderly with colorectal cancer.

Research design

Quasi-experimental design was utilized in this study.

Setting

This study was conducted on oncology institution and outpatient clinic of Sohag University Hospitals.

Sample

Purposive sample was used in this study with the following inclusion criteria.

Inclusion criteria

- Diagnosed with colorectal cancer.
- Age: from 60 years and above.
- Free from communication problems (speech or hearing problems).
- Agree to participate in the study.
- Receive chemotherapy and\ or radiation therapy.

Sample size: -the total number of elderly with colorectal cancer that attending oncology institution and oncology outpatient clinic in years 2019 were 1805 clients, 1125 client in oncology institution and 680 clients in outpatient clinic of Sohag University Hospitals. The number of elderly that included in the study was calculated by the following equation:-

n=N/ (1+N (e) 2) (Glenn, 1992)

- n= sample size
- N= population size = 1805
- e = 0, 05
- Therefore, n =1805/ (1+1805(0.0025)

After applied the above equation, the sample size was=327 elderly divided into 233 elderly in oncology institution and 94 elderly in outpatient clinic of Sohag University Hospitals.

Tools of data collection

Two tools were used to collect the data according to the following:

Tool I: A structured interview questionnaire (Appendix I): It was developed by the investigator based on the recent literature review to collect the necessary data. It was consisted of three parts:

Part I: Socio demographic characteristics of the elderly:
Sociodemographic characteristics of the elderly include as gender, age, residence, marital status, level of education, monthly income.
Part II: Medical history: Full history was taken from elderly include (past & present history).

Past history
It was involve 5 questions about presence of previous surgery, chronic diseases, type of diseases, and type of allergy, continues taking of medications, family history for colorectal cancer, and relation of patient with colorectal cancer.

Present history
It was involve 5 questions about elderly complain, onset of symptoms, signs and symptoms, type of treatment and side effect of treatment.

Part III: Assessment of elderly knowledge about colorectal cancer:-
Knowledge questions from questions (25-31) to assess elderly knowledge about colorectal cancer include definition, types, sign and symptom, risk factors, complications, prevention and type of treatment of colorectal cancer.

Scoring system for knowledge
This part includes 7 questions equal 14 grads. Each statement was assigned score according to elderly response were: Correct answered was scored 2 grades and incorrect was scored 1 grade. The total score of each item summed up and then converted into percent score

As the following

Knowledge	Score	%
-Poor knowledge	< 7	<50%
-Average knowledge	7-10	50 - <75%
-Good knowledge	11-14	≥ 75%

Tool II: include two parts:
Part I: Mindful Attention Awareness Scale (MAAS) (Appendix II): The MAAS was developed by (**Brown and Ryan, 2003**). To assess individual differences in the frequency of mindful states over time. The measurements from the MAAS consciousness related to self-regulation and various areas of well-being, such as" I could be experiencing some emotions and not be conscious of it until sometime later
Scoring system for MAAS: -The scale includes 15 items from question 32-46 with 3 point Likert scale range from never = 1, sometime= 2, always = 3. The scoring was ranged from (15-45) grade the high score the greater tendency toward mindfulness the total score was categorized as following:-

Mindful Attention Awareness Scale	Score	%
Low score	15-20	<50%
Moderate score	21-33	50 - <75%
High score	34-45	≥ 75%

Part II: Perceived stress scale (PSS) (Appendix III): The PSS by **(Cohen, 1988)** is the psychological instrument for measuring the perception of stress. The scale includes 10 items. It is measures of the degree to which situations in one's life are appraised as stressful. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. It was included:"In the last month, how often have you been upset because of something which happened unexpectedly,
The scale total score ranges from 1 to 30 grades.

Validity
The developed tool was formulated and submitted to five experts of Community Health Nursing and Geriatric Nursing, Faculty of Nursing- Helwan University and Sohag University, who reviewed the content of the tools for comprehensiveness, accuracy, clarity, relevance and applicability.

Perceived Stress Scale	Score	%
Low perceived stress	(1–10) grade.	<50%
Moderate perceived stress	(11–20) grade	50 - <75%
High perceived stress	(21–30) grade	≥ 75%

Reliability:
The study tools were tested for its internal consistency. Reliability for calculating cronbach' alpha of MAAS was 0.76 respectively. Reported that reliability of perceived stress scale (PSS) was 0.78 and for knowledge was 89.

Pilot study
The pilot study has been conducted to test the clarity, applicability and understand the ability of the tool. It has been conducted on 10% (33) elderly with colorectal cancer to examine the clarity of questions and determine the time needed to complete the study tools, no major modification done on it, so pilot study included in the main study sample.

Field work
Written approval letter to carry out this study was obtained from dean of Faculty of Nursing, Helwan University and was directed to manger of Oncology institution and University Hospitals in Sohag. The aim of the study and component of tool was explain for each elderly at the beginning of data collection.
Data was collected 2 days per week (Saturday and Tuesday) for 6 months .Time was take to fill study

tool about 30-45 min depend on the degree of response of each elderly. Study collected through structure face to face interview and the entire tool filled by the investigator.

Mindfulness based stress intervention program was conducted for the elderly though eight sessions for 30-45 mint. The investigator take 7 elderly in each day for two days per week (56 elderly per month, total number of elderly = 327 elderly in 6 month). The investigator use group discussion, brain storming and demonstration and use media as handout figure, booklet and laptop.

Ethical considerations

An official permission to conduct the proposed study was obtained from Scientific Research Ethics Committee in Faculty of Nursing- Helwan University and Sohag University. Participation in the study is voluntary and subjects were given complete full information about the study and their role before signing the informed consent. The ethical consideration was included explaining the purpose and nature of the study, stating the possibility to withdrawal at any time in the study, confidentiality of the information where it was not accessed by any other party without taking permission of the participation. Ethics, values, culture and beliefs was respected of the participant .

Statistical analysis

Upon completion of data collection, data was computed and analyzed and tabulated using Statistical Package for the Social Sciences (SPSS) version 24 for analysis. The p value was set at 0.00. Descriptive statistical tests as numbers, percentage, mean ±standard division ±(SD), will be used to describe the results. Appropriate inferential statistics such as "F" test or "T" test will be used as well

Results

Table (1): Shows that, 70% of elderly were in age group 60 < 70 years, as well as 90.2% were males. 89.9 % of them were married. 91.8 % of them live in rural areas. Regarding elderly level of education 84.1% had secondary education. While, 1.9 % of them were University or above. Then, 94.8% of them these monthly income not enough. According to the number of rooms that 58.2% had two rooms and 96.9 % of elderly live with family.

Table (2): Indicates that, a highly statistically significant improvements of elderly regarding all items of knowledge regarding colorectal cancer pre, and post intervention program phases P=<0.001.**Table (3):** Illustrates that, a highly statistically significance positive correlation between all items of socio-demographic as: age, gender, place of residence, education level, family caregivers, occupation, crowding index and monthly income P=<0.001and total elderly patients knowledge improvement regarding colorectal cancer.pre, and post intervention program. P=<0.001

Table (4): Illustrates that, a highly statistically significance positive correlation between all items of Total Mindfulness level and total elderly patients knowledge t regarding colorectal cancer.pre, and post intervention program. P=<0.001

Figure (1):- Represents that, 10% of elderly patients had high stress during month, 20% of the moderate stress during months, and only 70 % of them low stress during months after post intervention program P=<0.001

Figure (2):- Represents that, 30% of elderly had high Mindful Attention Awareness, 80% of the moderate mindful attention awareness, and 90 % of them mindful attention awareness in pre intervention program, improved to 70% of elderly had high mindful attention awareness, 20% of the moderate mindful attention awareness, and only 10 % of them low mindful attention awareness after post intervention program P=<0.001

Results

Table (1): Frequency distribution of elderly with colorectal cancer regarding socioemographic characteristics (n=327).

Item	No.	%
Age		
60≤70	230	70.3
70≤80	87	26.6
>800	10	3.1
Mean ± SD	**65.4±0.5**	
Gender		
Male	295	90.2
Females	32	9.8
Place of residence		
Rural	300	91.8
Urban	27	8.2
Marital status:		
Single	1	0.3
Widowed	30	9.2
Divorced	2	0.6
Married	294	89.9
Levels of educational		
Not read and write	24	7.3
Basic education	22	6.7
Secondary education	275	84.1
University or more	6	1.9
Monthly income		
Enough	17	5.2
Not enough	310	94.8
Number of family members		
<5	40	12.2
5-7	275	84.1
> 7	12	3.7
Numbers of room		
One	93	28.4
Two	190	58.2
More than two	44	13.4
Crowded index		
<3	300	91.8
≥3	27	8.2
Range	**0.25-2.50**	
With whom you live		
Family	317	96.9
Alone	10	3.1

Table (2) Elderly knowledge regarding colorectal cancer pre and post mindfulness intervention program (n=327)

Knowledge Items	Pre intervention program				Post intervention program				Paired t test	P value
	Correct		Incorrect		Correct		Incorrect			
	No	%	No	%	No	%	No	%		
Meaning of colorectal cancer	70	21.4	257	78.6.	220	67.3	107	32.7	19.288	0.000*
Types of colorectal cancer	75	22.9	252	77.1	230	70.3	97	29.7	23.877	0.000*
Sign and Symptoms of colorectal cancer	80	24.4	247	75.6	327	100.0	0	0.0	19.721	0.000*
Risk factors of colorectal cancer	65	19.8	262	80.2	290	88.7	37	11.	21.534	0.000*
Complications of colorectal cancer	120	36.7	207	63.3.	300	91.7	27	8.3	19.228	0.000*
ways to prevention of colorectal cancer	85	25.9	242	74.1	180	55.0	147	45.0	15.057	0.000*
Types of treatment	120	36.7	207	63.3.	327	100.0	0	0.0	17.304	0.000*

Table (3): Relation between sociodemographic characteristics and total knowledge of elderly pre &post intervention program (N=327).

Demographic characteristics	Knowledge Pre intervention program	Knowledge Post intervention program	Paired t test	P value
	Mean ±SD	Mean ±SD		
Age	13.08±2.30	19.22±3.02	18.527	<0.001**
Gender	11.10±2.88	18.12±2.33	14.544	<0.001**
Place of residence	9.11±3.56	15.18±3.66	16.677	<0.001**
level of Educational	7.86±1.62	11.94±2.42	15.981	<0.001**
Monthly income	7.16±1.58	12.47±1.93	24.752	<0.001**
Marital status	6.48±1.09	11.40±2.262	22.992	<0.001**
Number of family members	4.42±1.01	5.20±2.101	8.765	<0.422

Table (4): Correlation between total knowledge and mindful attention awareness level

Variable	Total Mindfulness level (n=327)	
	Correlation Coefficient	P value
Total knowledge	**0.39**	**<0.001****

Figure (1):- Distribution of elderly perceived stress feeling in last month post intervention program

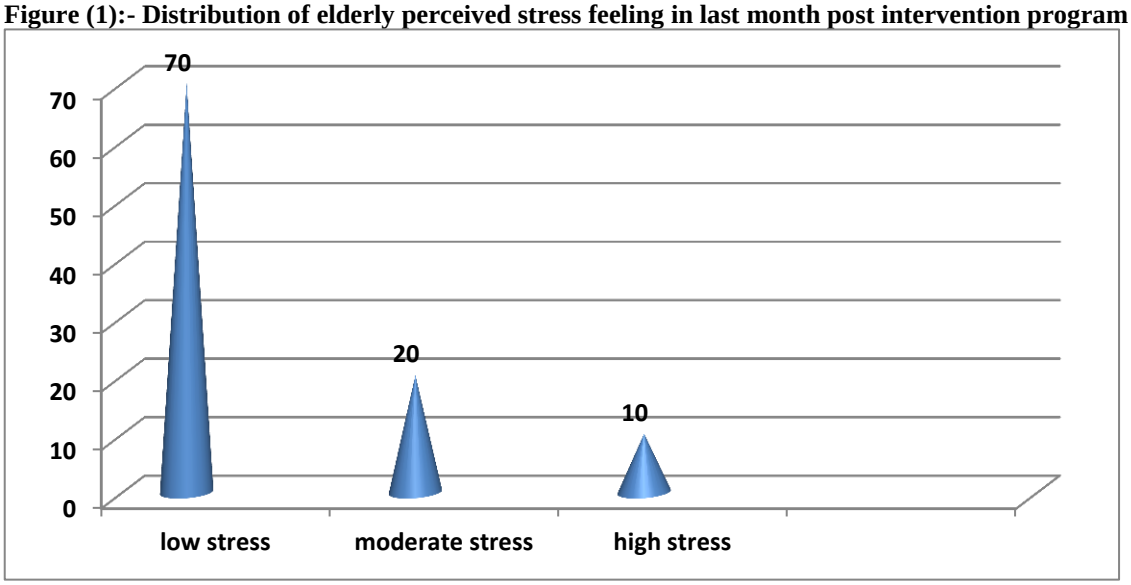
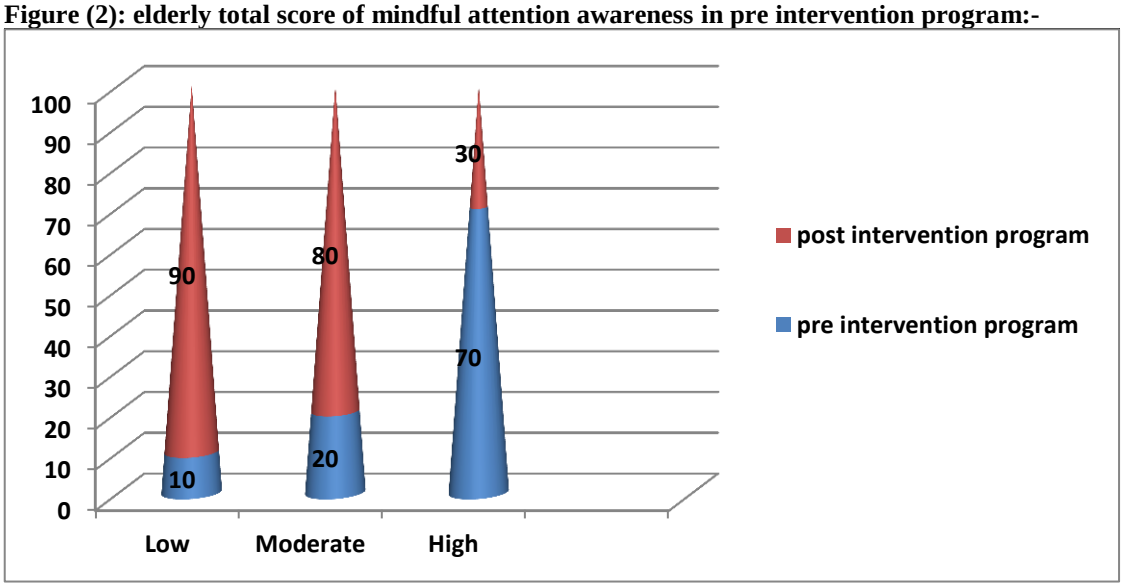


Figure (2): elderly total score of mindful attention awareness in pre intervention program:-



Discussion

Regarding total score of knowledge pre, and post intervention program, the current study represented that, minority of elderly had good total knowledge pre intervention program improved to majority of the patients after the post intervention program .While, one quarter of them were average level of total knowledge improved to three quarters post intervention program phase, and, less than one fifth of them poor total knowledge pre intervention program, improved to majority after post intervention program.

Regarding relation between, total knowledge and total mindfulness level, the current study illustrated that, a highly statistically significance positive correlation between all items of total Mindfulness level and total elderly knowledge regarding colorectal cancer.pre, and post intervention program. This result was supported with **Janusek et al., (2019)** who conducted a study entitled "Mindfulness based stress reduction provides psychological benefit and restores immune function of women newly diagnosed with breast cancer in America" and found that there was a highly statistically significant relation between patients' knowledge about cancer and their total mindfulness level. Conversely, this result was in disagreement with **Liu et al., (2019)** who conducted a study entitled "Mindfulness-based stress reduction in patients with differentiated thyroid cancer receiving radioactive iodine therapy in Brazil" and found that there was no statistically significant relation between patients' knowledge about cancer and their total mindfulness level. From the investigator point of view, this result may be due to knowledge of patients improved with their characteristics.

Regarding relation between demographic characteristics and total knowledge of studied

sample pre &post intervention Program, the current study illustrated that, a highly statistically significance positive correlation between all items of socio-demographic as: age, gender, place of residence, education level, family caregivers, occupation, crowding index and monthly income and total elderly patients knowledge improvement regarding colorectal cancer.pre, and post intervention program

This result was in agreement with **(Lucas et al., 2018)** who conducted a study entitled "Mindfulness-based movement for patients with cancer in Asia" and found that there was a statistically significant relation between patients' knowledge about cancer and their demographic characteristics. Conversely, this result was in disagreement with **Atreya et al., (2018)** who conducted a study entitled "A single-arm feasibility study of audio-based mindfulness meditation for colorectal cancer patients and caregivers in Japan" and found that there was no statistically significant relation between patients' knowledge about cancer and their demographic characteristics. From the investigator point of view, this result may be due to presences relation between knowledge of elderly people and their sociodemographic characteristics.

Regarding relation between total knowledge, total mindfulness level and perceive stress, the current study illustrates that, a highly statistically significance positive correlation between total elderly patients Total Mindfulness level total knowledge regarding colorectal cancer and Perceive stress, pre, and post intervention program. This result was supported with **Whitfield, (2021)** in New York, who conducted a study entitled "The Effect of Mindfulness-based Programs on Cognitive Function in Adults and found that there was a statistically significant relation between patients' knowledge and total mindfulness level. Also, this result was in agreement with **Mirmahmoodi et al., (2020)** in Iran who conducted a study entitled "The effect of mindfulness-based stress reduction group counseling on psychological and inflammatory responses of the elderly people with cancer and found that there was a statistically significant relation between patients' knowledge, perceived stress and total mindfulness level. From the investigator point of view, this result may be due to knowledge and stress was improved after implementation training program.

Conclusion

On the light of the current study results, and research hypothesis it can be concluded that:

The results of the present study suggest the effectiveness of mindfulness based intervention program on reduction of stress level in colorectal cancer elderly

Recommendations

On the light of the results of this study, the following recommendations were suggested:

1. Continuous of educational program for all elderly with colorectal cancer about mindfulness based intervention program effect on stress reduction
2. Booklet containing information about reduction of stress for elderly should be available in outpatient clinic.

For Further researches

Facilitation and suggested activities and program that would help elderly recover from disease

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