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EFFECT OF EDUCATIONAL PROGRAM ABOUT DIETARY AND PHYSICAL ACTIVITY ON FUNCTIONAL CONSTIPATION FOR ELDERLY PEOPLE AT ASSIUT GERIATRIC CLUBS

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ABSTRACT

Background: Constipation is a preventable and treatable health concern that develops as people age owing to a variety of reasons. **Aim:** This study evaluates the effect of educational program about dietary and physical activity on functional constipation among elderly. **Methods:** Quasi-experimental research design was used. This study was conducted in Assiut geriatric clubs. The sample composed of 145 elderly. Four tools were used: 1st tool included three parts: Part (1): Socio demographic characteristic Part (2): Medical history, Part (3): Knowledge about constipation. 2nd tool: Assess the functional constipation in elderly. 3rd tool: Assess Constipation Symptoms. 4th tool: consist of two parts: First part: Physical Activity Scale for the Elderly (PASE). Second part: 3-day food-recall diary, used to assess dietary statues and dietary habits. **Results:** Mean age of studied elderly was 64.67±2.64, while 94.5% were female. All study elderly in pretest complained about functional constipation, while in post, and follow up test about 9.7% and 51.7 % of them had functional constipation at post and follow up test respectively. There was a statistically significant difference between the functional constipation and constipation after drinking water, fenugreek, herbs and soup, eating brown bread and oats and nuts. **Conclusion:** Functional constipation symptom was severe in elderly which is related to low physical activity also suitable for dietary intake which help in relieving the symptoms of functional constipation. **Recommendations:** Health education program about functional constipation were effective in improving the outcome of functional constipation criteria by using effective teaching media like videos, role-play, and demonstration.

Keywords: Elderly;Functional Constipation; Dietary and Physical Activity

INTRODUCTION

In 2020, the world's population of people aged 65 years and up will be 727 million, the worldwide population of elderly people is expected to more than double over the next three decades, reaching 1.5 billion in 2050 (United Nations Department of Economic and Social Affairs, Population Division 2020). Egypt currently has 5.95 million senior persons, with that figure predicted to rise to 18.1 million by 2050 (Central Intelligence Agency, 2018).

Constipation is defined as bowel movements that are difficult, incomplete, or irregular. It is the most common digestive problem that it is considered as a symptom than a disease. It is a public problem among senior persons and may lead to health problems such as urinary retention and overflow incontinence if left untreated (Alimoradzadeh, Mokhtare, & Agah, 2017).

The term "functional constipation" refers to a group of disorders characterized by difficult, infrequent, or seemingly incomplete defecation. The following are the Rome II criteria (2014) for diagnosing constipation (Nour Eldein *et al.*, 2014; Farahat *et al.*, 2019).

Low fluid intake, less mobile patients, delayed bowel emptying, poor dentition, and the use of a variety of medications, such as antacids, calcium, and iron supplements, as well as radiotherapy and opioid pain relief for cancer treatment. As well as the development of comorbid medical conditions resulting in polypharmacy, are all risk factors for constipation (Susan *et al.*, 2017; Farahat, El-Esrigy, & Salama, 2019).

A nurse's involvement is critical in encouraging the elderly to engage in regular morning activity, such as walking. A caffeinated beverage first thing in the morning can help stimulate colonic function. A high-fiber breakfast, as well as 1.5–2 litres of water per day, are recommended (National Institute for Health and Care Excellence, 2017; Emmanuel *et al.*, 2017). Increased dietary fiber is made up of complex carbohydrate polymers that are poorly digested and pass practically unaltered through the colon (Rao, Yu, & Fedewa, 2015). Constipation should be treated with lifestyle changes first, as they improve general health and quality of life (Emmanuel *et al.*, 2017).

Significance of the Study

According to a population-based study, the elderly had a higher cumulative incidence of chronic constipation (20%) than the younger population. Constipation is more common in older women than it is in men, with female constipation rates being two to three times higher than male constipation rates (Roque & Bouras, 2015).

Aim of the Study: Effect of dietary and physical activity educational program on functional constipation among elderly.

Research Hypotheses

Hypotheses 0: Training program doesn't improve level of elderly knowledge and practice about functional constipation.

Hypotheses 1: Training program will improve level of elderly knowledge and practice to decrease severity of functional constipation.

METHODOLOGY

Research Design: Quasi-experimental research design was used to carry out this study.

Setting: study was conducted in Assiut Geriatric Clubs namely (Legitimacy Assembly and Islamic Cultural Center).

Sample: The study sample composed of 145 elderly participant aged 60 years and over and suffering from functional constipation based on Rome II criteria (2014) assessment. However, an elderly may have constipation if he/she has two or more symptoms.

Exclusion Criteria:

1. Previous intestinal surgery
2. Use of laxatives during this study

Tools of the study: Four tools were used

Tool (1): Self-administered Questioner

Part (I): Used to assess socio demographic characteristic as, age, sex, residence, marital status, income, occupation, and level of education and social activity (El-Gilany, El-Wehady, & M. El-Wasify, 2012).

Part (II): Medical history of elderly as hypertension, diabetes, atherosclerosis and renal failure, cardiovascular disease and medication used.

Part (III): Used to assess elderly knowledge's about constipation as definition, symptoms, risk factors, medication, and preventing of functional constipation by increase in mobility, exercise, diet, and fluid intake.

Tool (2): Used to assess the functional constipation in elderly:

Constipation is diagnosed using the Rome II criteria as follows: At least two of the following symptoms are connected with 25% of bowel movements (straining, hard or lumpy stools, a sense of incomplete evacuation, a sense of anorectal obstruction, the need for manual maneuvers, and fewer than three defecations per week) (Nour Eldein *et al.*,

2014).

Tool (3): Patient Assessment of Constipation Symptoms (PAC SYM) Questionnaire used to assess the self-reported severity of symptoms are absent, mild, moderate, severe, on the 4 Likert scale. The score included 12 items comprising three subscales abdominal (four items), rectal (three items), and stool (five items) (Nour Eldein *et al.*, 2014).

Tool (4):

Part (1): Physical Activity Scale for the Elderly (PASE) it is brief consisting of 10-item, questionnaire that measures physical activity of the past week.

The frequency of these events is graded as never [0], seldom (1-2 days/week [1]), sometimes (3-4 days/week [2]), and often (5-7 days/week [3]). The length is also graded as less than 1 hour [0], 1 to 2 hours [1], 2 to 4 hours [2], and more than 4 hours a week [3]. The final PASE activity score is calculated by multiplying by an item weight the amount of time spent on each activity (hr./week) (Colleen, 2012).

Part II: 3-day food-recall diary.

Reported data by elderly and some time by elderly family for everything related to eating and drinking for 3 days (2 weekdays and 1 weekend day), including all meals, snacks, and beverages (Vargas-García, &Vargas-Salado, 2013).

Validate of the tools: The tools were translated to Arabic language and reviewed by five experts in the community and gerontological health nursing to ascertain their validity, for clarity, relevance, comprehensiveness, understanding and applicability.

Reliability: was measured using Cronbachs' Alpha test on 10% of cases it was 0.887 for knowledge, 0.692 for functional constipation, 0.963 for severity, and 0.668 for physical activities, 0. 741 for diet.

Methods

Administrative phase: Chiefs of geriatric clubs in Assiut city received official agreement permission from the Dean of the Faculty of Nursing. The clearance to conduct the study was provided in this letter, as well as an explanation of the study's goal.

Pilot Study: Pilot study was carried out before starting of data collection on 10% of elderly patients in a selected setting to examine the applicability, and clarity of the developed tools. It was not excluded from the study.

Ethical Considerations: The Faculty of Nursing's Ethical Committee approved the research proposal on 1st January 2019, at Assiut University. During the implementation of the research, there is no risk to the study subjects. The elderly was reminded that they have the right to withdraw from the study at any time. Confidentiality and anonymity were assured. The study followed common ethical principle in clinical research. Chiefs of geriatric clubs were given an explanation of the research's goal.

Data Collection: The purpose of the study was clarified to studied elderly to gain their cooperation before starting data collection. The study started from the beginning of September to the end of February 2020. The dietary and physical activity program was done on the elderly participants (145). The data was collected 3 days per week at evening time from 7 pm to 11 pm and it repeated for each group and consisted of 4-5 participants, the interview questionnaire was filled by the researchers. The educational program was involved 3 sessions each session took one to one and half hours. The 1st session included assessment of the functional constipation. The 2nd session included explanation of healthy balanced diet, adequate fluid intake, and regular walking required to improve constipation. The 3rd session included explanation of the lifestyle change (importance of regular bowel habits, best position for defecation, alternative medication and an indication of laxative use).

Statistical Analysis: The obtained data were reviewed, prepared for computer entry, coded, analyzed, and tabulated. Descriptive statistic (percentages, means and standard deviations) were done using computer program SPSS version 26. One-way analysis of variance (ANOVA) test was used to compare means. Tests of significance used were F test and Chi-square test P Value is significant at $P<0.05$ and highly significant at $P<0.01$.

RESULTS

Table 1: Socio Demographic Characteristics of Functional Constipation Elderly at Assiut Geriatric Clubs, 2019

Items	No. (n=145)	%
Age/(years):		
- 60 -< 65	73	50.3
- 65 -< 70	68	46.9
- ≥70	4	2.8
Mean ± SD	64.67±2.64	
Sex:		
- Male	8	5.5
- Female	137	94.5
Marital Status:		
- Married	83	57.2
- Widow	60	41.4
- Divorced	2	1.4
Level of Education:		
- Primary education	14	9.6
- Preparatory education	10	6.9
- Secondary (general & technical of 3 or 5 years)	90	62.1
- University graduate	31	21.4
Past Occupation:		
- Non-working/ housewife	34	23.4
- Employee	103	71.1
- Technical	8	5.5
Residence:		
- Rural	4	2.8
- Urban	141	97.2
Family income:		
- Just meet routine expenses	63	43.5
- Able to save/invest money	82	56.5
Living with:		
- Alone	42	29.0
- With their family	103	71.0
Social Level:		
- Low	28	19.3
- Middle	72	49.7
- High	45	31.0

Table 1 Illustrated that 50.3% of the studied sample were aged between 60-<65 years, with mean ±S.D. 64.67±2.64. About 94.5% and 97.2% of them were female and from urban area. Also showed that 62.1%, secondary education. And 71.0 % of them lived with their family, while less than half (49.7%) of the studied elderly have middle socioeconomic level.

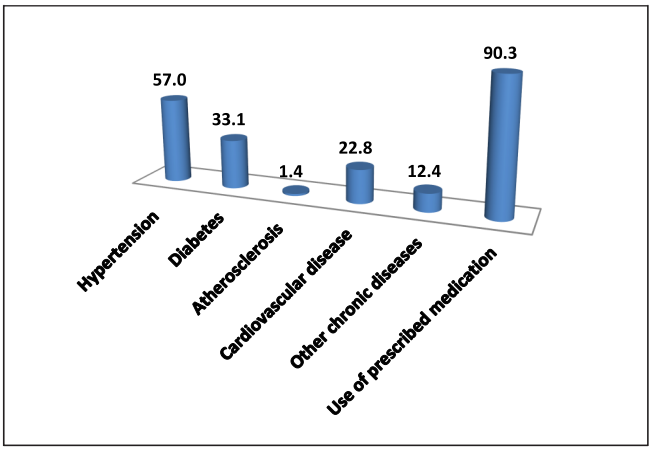

Figure 1: Medical history of Elderly with Functional Constipation at Assiut Geriatric Clubs, 2019

Figure 1 showed that 57.0% of studied elderly had history of hypertension while 1.4% of them had atherosclerosis.

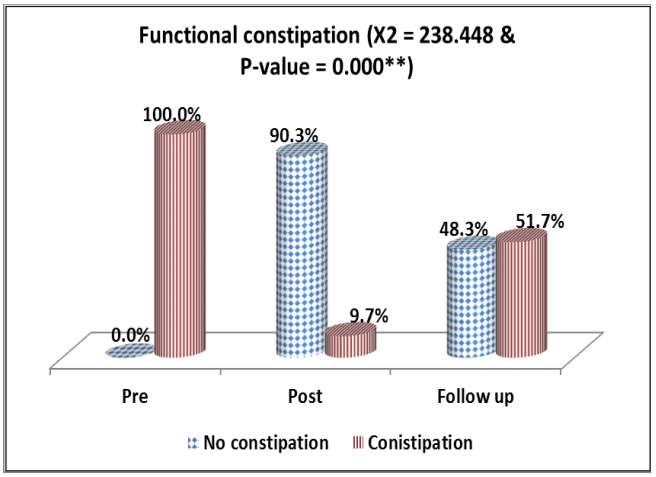

Figure 2: Distribution of the Studied Elderly Regarding to Occurrence of Functional Constipation at Assiut Geriatric Clubs, 2019

Figure 2 revealed that 100.0%, 9.7% and 51.7% had functional constipation at pre, post, and follow up test respectively, and highly statistically significant difference between pre, post, and follow up with *P*-value=0.000.

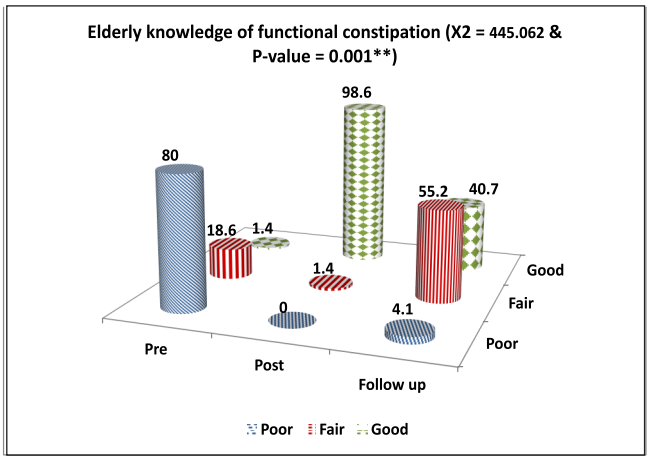

Figure 3: Relation Between Knowledge of Studied Elderly at Pre, Post and Follow up Test about Functional Constipation at Assiut Geriatric Clubs, 2019.

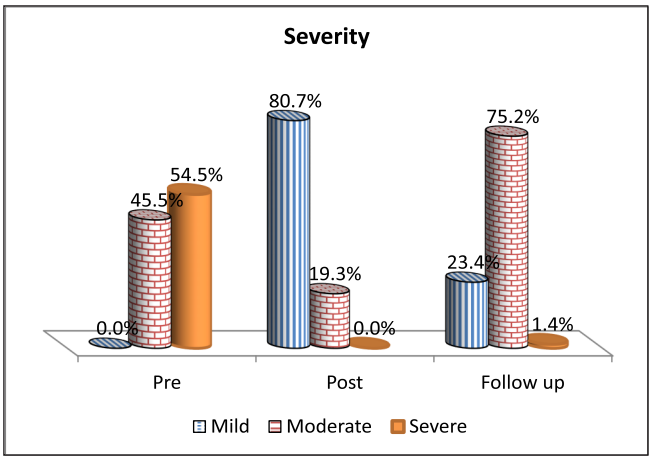

Figure 4: Distribution of the Studied Elderly Regarding to Severity of Functional Constipation at Pre, Post and follow up test, at Assiut Geriatric Clubs 2019

The present study showed that more than half of studied elderly had severe symptoms of constipation at pretest there is no symptoms in posttest.

Table 2: Means and Standard Deviation of the Functional Constipation among Elderly Regarding their Total Activities During Last 7 Days at Pre, Post and Follow up Test, at Assiut Geriatric Clubs 2019

Items	Pre (n = 145)	Post (n = 145)	Follow up (n = 145)	F	*P* - value
	Mean ± SD	Mean ± SD	Mean ± SD		
Sitting activities	4.34±1.26	4.30±1.20	4.20±1.19	0.486	0.615
Sitting activities time	1.52±0.943	1.37±0.889	1.47±0.928	1.009	0.365
Walking activities	0.14±0.384	1.33±0.882	0.92±0.795	102.467	**0.001****
Walking time	0.01±.117	0.07±.254	0.04±.260	2.266	0.105
Light activities	2.35±1.83	2.86±1.70	2.34±1.65	4.367	**0.013****
Light activities time	0.94±0.643	0.96±0.676	0.91±0.600	0.219	0.804
Moderate activities	3.24±1.25	3.46±1.56	3.28±1.40	0.995	0.370
Moderate activities time	1.86±0.773	1.74±0.815	1.70±0.792	1.418	0.243
Strenuous activities	0.08±0.43	0.06±0.43	0.08±0.38	0.053	0.949
Strenuous activities Time	0.00±0.000	0.00±0.000	0.00±0.000	-	-
Muscle strength activities	0.04±0.19	1.31±1.02	0.67±0.73	107.511	**0.001****
Muscle strength activities time	0.00±0.000	0.03±0.164	0.03±0.164	2.043	0.131
Household activity	6.80±0.829	6.78±0.883	6.75±0.876	0.086	0.917

*** P Value is significant at P<0.05*

Table 2 displayed mean and standard deviation that showed statistically significant difference regarding, walking, light and muscle strength activities at pre, and follow up test with *p*- value=0.000.

Table 3: Means and Standard Deviation of the Functional Constipation of Elderly Regarding Foods that have been Eaten During Last Three Days, at Assiut Geriatric Clubs 2019

Items	Pre (n = 145)	Post (n = 145)	Follow up (n = 145)	F	*P* - value
	Mean ± Std. Deviation	Mean ± Std. Deviation	Mean ± Std. Deviation		
Food help to prevent functional constipation					
- Green fruit or vegetable	65.77±63.23	148.89±106.30	160.20±87.29	50.474	0.001**
- Fenugreek, herbs and soup	28.27±34.54	146.20±119.16	117.01±101.54	63.841	0.001**
- Brown bread	142.70±32.05	132.01±36.95	149.01±39.42	8.138	0.001**
- Oats, Nuts	3.82±8.07	32.62±18.01	21.59±16.27	140.173	0.001**
- Honey	2.68±6.77	0.82±2.35	0.4138±1.382	11.992	0.001**
-Cocked vegetables	79.71±44.92	109.00±116.12	129.74±113.00	9.722	0.001**
- Water	896.45±233.33	129.02±212.33	982.75±163.87	150.518	0.001**
Food it helps the occurrence of constipation					
- Caffeine drinks	292.55±163.83	90.34±86.52	94.71±81.61	141.584	0.001**
- Milk products	140.79±69.08	159.96±78.24	146.65±77.01	2.495	0.084
- Fried food and crackers	9.03±15.85	5.44±11.05	8.34±16.48	2.440	0.088
- Rice or pasta	64.66±47.39	40.10±39.16	33.63±34.81	23.355	0.001**
- White Bread	41.95±41.85	6.89±15.16	9.8851±13.95	75.489	0.001**

*** P Value is significant at P<0.05*

Table 3: Cleared highly statistically significant different regarding all types of foods that help in the prevention of constipation during last three days with *P* Value =0.000 at pre, post and follow up test. While concerned foods that help occurrence of constipation showed significant difference with *P* Value =0.000 at pre, post and follow up test.

Table 4: Relation with Food Eaten that Helps to Prevent Functional Constipation at Pre, Post And Follow up Test, At Assiut Geriatric Clubs 2019

Food helps to prevent constipation		Functional constipation(n=145)				X^2	*P*-value
		No constipation		constipation			
		No.	%	No.	%		
Water							
Pre	less than recommended	0	0.0	95	65.5	41.908	0.001**
	recommended amount	0	0.0	50	34.5		
Post	less than recommended	22	15.2	8	5.5		
	recommended amount	109	75.2	6	4.1		
Follow up	less than recommended	46	31.7	49	33.8		
	recommended amount	24	16.6	26	17.9		

Green fruit or vegetable							
Pre	less than recommended	0	0.0	145	100.0	3.396	0.065
Post	less than recommended	122	84.1	11	7.6		
	recommended amount	9	6.2	3	2.1		
Follow up	less than recommended	68	46.9	73	50.3		
	recommended amount	2	1.4	2	1.4		
Fenugreek, herbs and soup							
Pre	less than recommended	0	0.0	145	100.0	24.975	0.001**
Post	less than recommended	107	73.8	10	6.9		
	recommended amount	24	16.6	4	2.8		
Follow up	less than recommended	58	40.0	71	49.0		
	recommended amount	12	8.3	4	2.8		
Brown bread							
Pre	less than recommended	0	0.0	6	4.1	20.174	0.001**
	recommended amount	0	0.0	139	95.9		
Post	less than recommended	28	19.3	2	1.4		
	recommended amount	103	71.0	12	8.3		
Follow up	less than recommended	10	6.9	4	2.8		
	recommended amount	60	41.4	71	49.0		
Cocked vegetable							
Pre	less than recommended	0	0.0	36	24.8	0.581	0.446
	recommended amount	0	0.0	109	75.2		
Post	less than recommended	28	19.3	3	2.1		
	recommended amount	103	71.0	11	7.6		
Follow up	less than recommended	5	3.4	6	4.1		
	recommended amount	65	44.8	69	47.6		

Oats, Nuts							
Pre	less than recommended	0	0.0	145	100.0		
Post	less than recommended	99	68.3	11	7.6		
	recommended amount	32	22.1	3	2.1	24.555	0.001**
Follow up	less than recommended	68	46.9	71	49.0		
	recommended amount	2	1.4	4	2.8		
Honey							
Pre	less than recommended	0	0.0	121	83.4		
	recommended amount	0	0.0	24	16.6		
Post	less than recommended	115	79.3	12	8.3		
	recommended amount	16	11.0	2	1.4	2.086	0.149
Follow up	less than recommended	66	45.5	67	46.2		
	recommended amount	4	2.8	8	5.5		

Table 4 recorded that statistically significant difference with *p*-value=0.000 in relation between functional constipation and drink water, fenugreek, herbs and soup, eaten brown bread and oats, nuts.

Table 5: Relation Between Eaten Food That Helps in Occurrence of Functional Constipation at Pre, Post and Follow up Test, 2019

Food that helps to occurrence of constipation		**Functional constipation(n=145)**				X^2	***P*-value**
		No constipation		**constipation**			
		No.	%	No.	%		
Rice or pasta							
Pre	Recommended amount	0	0.0	62	42.8		
	More than recommended	0	0.0	83	57.2		
Post	Recommended amount	97	66.9	10	6.9	13.694	0. 001**
	More than recommended	34	23.4	4	2.8		
Follow up	Recommended amount	56	38.6	67	46.2		
	More than recommended	14	9.7	8	5.5		

Caffeine drinks							
Pre	Recommended amount	0	0.0	18	12.4		
	More than recommended	0	0.0	127	87.6		
Post	Recommended amount	85	58.6	8	5.5	65.534	0.001**
	More than recommended	46	31.7	6	4.1		
Follow up	Recommended amount	46	31.7	36	24.8		
	More than recommended	24	16.6	39	26.9		
Milk products							
Pre	Recommended amount	0	0.0	60	41.4	0.526	0.468
	More than recommended	0	0.0	85	58.6		
Post	Recommended amount	52	35.9	7	4.8		
	More than recommended	79	54.5	7	4.8		
Follow up	Recommended amount	27	18.6	33	22.8		
	More than recommended	43	29.7	42	29.0		
Fried food and crackers							
Pre	Recommended amount	0	0.0	93	64.1		
	More than recommended	0	0.0	52	35.9		
Post	Recommended amount	105	72.4	10	6.9	4.696	0.030*
	More than recommended	26	17.9	4	2.8		
Follow up	Recommended amount	48	33.1	53	36.6		
	More than recommended	22	15.2	22	15.2		
White bread							
Pre	Recommended amount	0	0.0	44	30.3		
	More than recommended	0	0.0	101	69.7		
Post	Recommended amount	105	72.4	10	6.9		
	More than recommended	26	17.9	4	2.8	38.002	0.001**
Follow up	Recommended amount	40	27.6	46	31.7		
	More than recommended	30	20.7	29	20.0		

*** P Value is significant at P<0.05*

Table 5 showed the relation between food eaten that helps to increase the occurrence of constipation revealed statistically significant difference throughout program phases in all items with *p*-value= 0.000 except in eaten milk products.

DISCUSSION

The current study represented that more than half of the studied sample had a history of hypertension followed by diabetes. Most of them used prescribed medication. A high prevalence of chronic diseases in old age, like the gastrointestinal diseases are of particular importance.

This agreed with Fragakis *et al.,* (2018) who found constipation is prevalent in the Greater Western Sydney community. Constipation is linked to the quantity of medicines used, especially those with constipation. As a result, among the elderly with constipation, the focus should be on reducing the number of pharmaceuticals consumed rather than providing drugs with constipation as an adverse effect.

The present study documented that occurrence of functional constipation decreased after application of the educational program with statistically significance difference between pre, post, and follow up test. This means that the educational program was effective on the prevalence of functional constipation among the studied sample.

This agreed with Taniguchi *et al.*, (2017) that found that consumption of waxy barley improved bowel movements and concluded that the consumption of dietary proper intake for 2 weeks improved defecation frequency and other symptoms of constipation. The present study disagreed with Yeun & Lee, (2015) who found that there was an improvement in the elderly prevalence of functional constipation after application of the program.

The present study illustrated generally there was a great improvement in the elderly total knowledge level in their knowledge at pre, post and follow up level.

Furthermore, Emmanuel, Mattace-Raso & Neri, (2017) found statistically significant improvements in the knowledge of the elderly in the study group in all aspects studied at the post-intervention phase. Zisberg *et al.*, (2020) discovered that the study intervention was the sole statistically significant independent predictor of the knowledge score, explaining that more than half of this studied sample had improvement in elderly knowledge score.

The findings are consistent with those of Gao *et al.* (2019), who discovered a positive effect of educational programme on the elderly's awareness of pre-prevention and control of constipation. In line with Mohamed *et al.*, (2013), who discovered that the intervention was helpful in enhancing their knowledge and shifting their attitudes to a more positive state, resulting in changes in their eating habits.

The present study showed that more than half of studied elderly had severe symptoms of constipation at pretest there is no symptoms in posttest.

This is in line with the findings of Ozturk & Klc (2019), who discovered that training on lifestyle adjustment led to a reduction in the intensity of constipation symptoms. Furthermore, Sierżantowicz, Lewko, & Jurkowska, (2020) found a highly statistically significant improvement in the intensity of constipation symptoms after a post-educational intervention on lifestyle adjustment, as measured by the Patient Assessment of Constipation Symptoms (PAC-SYM).

The present study displayed that the total activities of studied elderly recorded during the last 7 days, that there was no statistically significant with respect to improvement except physical activities like walking, light and muscle strength activities documented significant difference in level of constipation.

Furthermore, George, & Borello-France, (2017) discovered that a 12-week programme of regular daily physical exercise relieved various symptoms of constipation, demonstrating that potential physical activity is necessary to promote colonic motility for chronic constipation. This is supported by Forootan, Bagheri, & Darvishi, (2018), who discovered that dietary changes, higher intestinal transit times, lack of physical activity, and recurrent medication used are all factors in functional constipation in the elderly.

The present study revealed that regarding all types of foods that help prevent constipation. While concerned foods that helped in the decrease of constipation showed statistically significant difference at pre, post and follow up test.

This is in agreement with Dobarrio-Sanz *et al.*, (2020), who investigated the impact of non-pharmacological therapies on the progression of

constipation in older seniors in long-term care facilities. Laxative tea, fermented oat drink, and patient education were among the interventions that increased the amount of bowel movements. These findings are consistent with Rondanelli *et al.*, (2018), who discovered that fiber consumption is particularly important in the elderly, to the point where all national dietary guidelines and the food guide pyramid for the elderly emphasis the importance of increasing dietary fiber consumption, such as fruits and vegetables, to prevent functional constipation.

As a result, the current study findings are corroborated by Haller *et al.*, (2020), who reported in a trial in which the intervention group received oat bran (fibre) for 12 weeks mixed in their regular diet while the control group received no extra fibre. Fiber supplementation in the cake formula permitted more than half of the fibre group to stop taking laxatives. This suggested that higher fibre consumption among the sample, together with other changes, could account for the drop in laxative usage and the intervention's success.

CONCLUSION

Constipation was relatively common in elderly. Socio-demographic factors associated with old age, female gender, along with low level of knowledge, physical activity and suitable dietary intake are related with increase symptoms of functional constipation among elderly.

Recommendations

Health education about functional constipation, physical activity, suitable dietary intake and toileting habits therough mass media, TV, radio, and magazine is necessary.

A simplified booklet about functional constipation (symptoms, physical activity and suitable diet) must be provided in the library of geriatric clubs.

Conflict Interest:

There is no conflict of interest.

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