Health Education Program for Improving Quality of Life of Older Adults Suffering from Chronic Constipation

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Abstract

Background: Chronic constipation is a major global health problem affecting millions of people, particularly in the older adults with significant impact on their quality of life and health expenses. **Aim:** the aim of the present study is to evaluate the outcomes of health education program on improving quality of life of older adults suffering from chronic constipation. **Study Design:** A quasi-experimental design was utilized. **Setting:** This study was conducted in geriatric homes situated within Cairo Governorate which comprises twenty districts. **Sampling:** A multistage random sample technique chosen 25% from the total districts and purposive sample of 58 older adults with chronic constipation were included, male and female aged ≥ 60 years old in this study. **Tools:** Three tools were used for data collection. **First Tool:** An interviewing questionnaire for older adults with chronic constipation including six parts: Rome III Diagnostic Criteria for Assessment Chronic Constipation and Mini Mental status test were used as initial measure to screen participants for inclusion criteria, socio-demographic characteristics, past and present medical history, assessment of older adults awareness regarding chronic constipation, Patient Assessment of Constipation Symptoms (PAC-SYM), and Patient Assessment of Constipation Quality of Life (PAC-QOL). **Second Tool:** lifestyle practices questionnaire for older adults with chronic constipation include two parts; Bristol Stool Form Scale (BSF) and Aspects of Lifestyle Health Practices. **Third tool:** Observation Check List for assessment geriatric home environment. **Results**: The study revealed that more than three quarters of the older adults had satisfactory level of awareness about chronic constipation post program implementation. The Total Score of PAC-SYM and subscale (Abdominal, Rectal and Stool symptoms) reached highly statistically significance difference. The Total Score of the PAC-QOL and subscale (Physical discomfort, Psychosocial discomfort, Worries & concerns, and Satisfaction) reached highly statistically significance between score pre/post implementation of the health educational program.**Conclusion:**The health education program reported remarkable improvement in older adult's awareness, decreased the severity of constipation symptoms, improved discomfort able subscales of quality of life and raised satisfaction subscales through lifestyles practices modifications post health education program. **Recommendations:** Raising public awareness through educational campaigns and mass media about healthy lifestyle for older adults in the geriatric homes to improve their quality of life toward chronic constipation.

Key words; chronic constipation, health education program, older adults, quality of life.

Introduction:

Global population ageing is an important challenge and opportunity to be taken on by virtually all countries. The world's population is not only growing larger, it is also becoming older **(United Nations Population Fund-UNFPA, 2014)**. According to **World Health Organization, (2015)** by 2050, the world's population aged 60 years and older is expected to be around 2 billion, up from 900 million in 2015. Today, 125 million people are aged 80 years or older.

Central Agency for Public Mobilization and Statistics- CAPMAS, (2014) showed that the number of elderly people in Egypt amounted to be 6 million elderly (three million males, three million females) in 2014 by 6.9% of the total population, expected to rise this percentage to 11.5% in 2013 according to the estimation by the first inhabitants of July 2014.The number of elderly people now in Egypt over 65 years old is about 4.5% of the total people, compared with 15-22% in Japan and the United States, Europe, and the

proportion is expected to be in Egypt to about 6-8% of the total population **(Cairo Social Affairs, 2012).**

Constipation is a frequently reported bowel symptom in the elderly with considerable impact on quality of life and health expenses. Although constipation is not a physiologic consequence of normal aging, decreased mobility, medications, underlying diseases, and rectal sensory-motor dysfunction may all contribute to its increased prevalence in older adults. In the elderly there is usually more than one etiologic mechanism, requiring a multifactorial treatment approach. The majority of patients would respond to diet and lifestyle modifications reinforced by bowel training measures. In those not responding to conservative treatment, the approach needs to be tailored addressing all comorbid conditions **(De Giorgio, Ruggeri, Stanghellini, Eusebi, Bazzoli, and Chiarioni, 2015).**

Health professionals should take a proactive approach to bowel management **(NICE, 2007&NICE, 2015).Wessel (2015)** clarified, nurses are in an ideal position to identify patients at risk of constipation and to assess for signs and symptoms. The promotion of good bowel habits is an important aspect of holistic management of patient care. A good knowledge and understanding of the risk factors for constipation aids in its prevention. Patients should also be offered education and advice on managing their constipation. Simple lifestyle changes, such as an increase in fluid intake, regular exercise and eating fiber rich food may be effective in managing constipation, while referral to specialist services and establishing relationships between the community and hospital are also important aspects of providing integrated patient centered care.

Justification of the problem:

In Egypt: The growing population of elderly Egyptians is a well-known fact and constitutes an evolving problems for society as a whole. According to a report done by the Central Agency for Public Mobilization and Statistics **(CAPMAS)** the number of elderly people in Egypt in 2013 reached 6 461 078 persons,

representing7.8% of the total population **(WHO 2015)**.

Accordingly, the prevalence of constipation is higher in long-term care with up to 74% of nursing home residents using daily laxatives. In fact, constipation often leads to deterioration in health-related quality of life and also increases time and economic cost of constipation care in long stay **(Chien-Hsun et al, 2012).**

Approximately 60–80% of the residents have symptoms of haemorrhoids, faecal impaction, ulcers, intestinal bleeding and can also lead to a decrease in quality of life. Many factors cause constipation but the risk factors are differ for each individual **(Huang, Yang, Tsai, Chin, Wang and Tasi, 2015)**.

Aim of the study:

The aim of the present study is to evaluate the outcomes of health education program on improving quality of life of older adults suffering from chronic constipation.

Research Hypothesis: The implementation of a health education program for older adults suffering from chronic constipation will improve their quality of life and awareness about chronic constipation.

Subjects and Methods:
Study design:

This is quasi-experimental design used to explore the outcomes of a health education program on quality of life of older adults with chronic constipation.

Technical Design:

Setting: This study conducted in geriatric homes situated within Cairo Governorate which comprises twenty districts, include fifty-nine homes resided for both genders with a total capacity of 1327 older adults; 529 males and 798 females **(Social Affairs/ Administration For Children And Families – Geriatric Care Department, 2012)**. The actual districts conducted in the study are four namely: Shobra, El-Sayda Zeinb, Maser El-gedida, and Abdeen district). From each district one geriatric home of the highest density older adults was chosen. After that a purposive

sample of older adults was recruited in the study according to the inclusion criteria.

Sampling:

Type: Multistage random sample technique to choose the geriatric homes.

Size: A total number of 58 purposive sample was used to choose older adults recruited in the study according to the inclusion criteria Rome III **(Longstreth et al., 2006)** + Mentally intact (using Mini Mental Status Test, MMST) **(Clark, et al. 2008)**.

Criteria:

• **Inclusion criteria:**
- All older adults have sixty years and above.
- Have a symptom of constipation according to (Rome III) adapted by **(Longstreth et al., 2006).**
- Mentally intact (using Mini Mental Status Test)

• **Exclusion criteria:**
- Older adults with dementia.
- Older adults suffering from stomach or colon cancer.

Tools of data collection:

Three tools were used for data collection:

First Tool: An interviewing questionnaire for older adults with chronic constipation:

This tool is an Arabic interviewing sheet constructed by the investigator after reviewing the recent related literature and expert's opinion included six parts.

Part-1: Rome III Diagnostic Criteria for Assessment of Chronic Constipation and Mini Mental Status Test (MMST).

Initial measures were used to screen participants for inclusion criteria applied in four geriatric homes to select/chose who has chronic constipation.

Part-2: Socio demographic characteristics such as: age, gender, educational level, occupation, income per-capita, marital status, presence of offspring.

Part-3: Past and present health history as regards to: diseases, medications, hospitalization, surgical intervention, bowel movement characteristics, digestive problems, and history of chronic constipation problem with older adults such as onset and period of the problem.

Part-4: Assessment of the older Adult's awareness regarding chronic constipation such as: meaning, causes, sex risk factors, prevalence in age group, red flag, complications, treatment and prevention/control measures. This tool used pre/post the implementation of the health educational program.

❖ **Scoring system:**

Related to older Adult's awareness regarding chronic constipation assessment; a correct answer was scored one and each incorrect answer scored zero. The total marks of awareness questions scored (16 points), a total of 50% and above were considered satisfactory and less than 50% were considered unsatisfactory.

Part-5: Patient Assessment of Constipation (PAC-SYM) it's developed by **(Franck et al., 1999and copy rights by Johnson & Johnson, 2001)** and modified by the investigator. The Patient Assessment of Constipation – Symptom (PAC-SYM) was developed to assess symptom frequency and severity of chronic constipation in the previous weeks. Includes 12-item self-report measure, it divided into three symptoms subscales: abdominal symptoms (4items), rectal symptoms (3items) and stool symptoms (5 items). It assessed pre/post health educational program implementation.

❖ **Scoring system**

It is five – grade (0-4)likert scale. The high scores indicate worsening severity of symptoms. A total score for the PAC-SYM can range from 0 to 48.

Part-6: Patient Assessment of Constipation Quality of Life (PAC-QOL) developed by **(Marquis et al 2005)** and was modified by the investigator. PAC-QOL was used to assess the impact of constipation on

QOL in previous weeks. Contains twenty-eight items assigned to four subscales:

❖ Scoring system

The five–grade (0-4) likert scale. High scores indicate a worst QOL for subscales (Physical, Psychosocial, Worries and concerns) with total score ranged from (0-96). However reserve coding was required in satisfaction subscales, with score ranged from (0-16). Higher scores indicate a better satisfaction and better QOL. It used pre/post health educational program implementation.

Second Tool: lifestyle practices questionnaire for older adults with chronic constipation: This tool includes two parts:

Part-1: Bristol Stool Form Scale (BSF) developed by (**Lewis, 1997**). The BSF is a self-diagnostic chart that is designed to measure general stool appearance and consistency, contains 7 types of stool forms, type 1 and 2 indicated constipation (hard or impacted stools), type 3 and 4 indicated ideal or normal stool consistency, type 5 equal slightly too soft, type 6 and 7 signify too soft and too loose. It is used to assess elderly state pre/post health education program implementation.

B- Aspects of Lifestyle practices: Adopted from **International Foundation for Functional Gastrointestinal Disorders (IFFGD, 2005)** through Personal Daily Diary and **Ministry of Health and Population(MOHP, 2006)** and adapted by the investigator and validated by the expertise's from Faculty of Nursing to assess lifestyle practices for chronic constipation among older adults, it included 9 aspects of lifestyle. It is used to assess elderly state pre/post health education program implementation.

❖ Scoring system

The total score for lifestyle practices less than 50% consider unsatisfactory lifestyle and more than 50% consider satisfactory lifestyle.

Third Tool: Observation checklist for assessment of geriatric home environment.

It was developed by the investigator based on related & recent literature review, experts opinion and investigator experience. It included 11 areas for checklist assessment as; location (contains 3 items), garden (contains 2 items), club (contains 4 items), social worker (contains 4 items), lavatory/bathroom (contains 8 items), toilets (contains 6 items), kitchen (contains 5 items), nutrition supervisor (contains 2 items), availability of health care services including: clinic (contains 4 items), physiotherapy room (contains 3 items), and garbage (contains 1 item).

Content validity: The tools were tested through five expertises from community health nursing department, Faculty of Nursing, Ain Shams University.

Pilot study:

It was conducted on 6 older adults with chronic constipation representing 10% of the total study sample, the aim of the pilot study was to evaluate clarity, visibility, applicability, as well as the time required to complete the developed tools. According to the obtained results, modifications such as omission, addition and rewording were done. The older adults' included in the pilot study were excluded from the study sample.

Field work:

- An official permission including the title and purpose of the study were submitted from the Dean of the Faculty of Nursing Ain Shams University and forwarded to the director of Public Security Administration- Ministry of Insurance and Social Affairs, to give an official permission letter directed to the undersecretary of Social Affairs- Administration of Children and Families- Geriatric Care. After that we got an approval for data collection to conduct the study that forwarded to director of Geriatric Homes where the study was conducted.
- After obtaining the permission the investigator started to visit each geriatric

home, meet the director and explain the aim of the study and program content.

- After permission, the investigator started to introduce herself to the selected older adults and explaining the aim of the study, assured that data collected will be confidential and will used only to achieve the purpose of the study.

- The study work started from last week of March of 2015 to last week of December 2015. The actual duration for data collection was nine months.

- The investigator visits the pre-mentioned setting (Four geriatric homes), four days per week, one day for each district with average one–three elderly assessed per visit. The assessment phase (pre-test) was done for collecting the data from 58 older adults while 57 elderly in post-test. It took three months to be fulfilled, before the implementation of the health education program.

- Based on the analysis of the pre-test elderly needs were identified and the educational program content were developed.

- The implementation phase of the program took four months, four days/week, through visiting the pre-mentioned setting, one day/week; four to five hours/day from (9am - 1or 2pm) OR (10am - 2or 3pm) and sometimes from (12pm – 4 or 5pm) for each geriatric home, and teaching sessions were conducted in the most suitable place in geriatric home (in general the investigator almost keep working outside older adults room to encourage them to move).

- The evaluation phase of the program took two months to determine the level of improvement for older adults suffering from chronic constipation toward their quality of life.

Ethical consideration

Oral approval obtained from each older

adults to participate in the study after explaining the objectives of the study and ensuring that there was no harmful effect on them. Confidentiality of the collected data was ensured and withdraw from the study at any time was accepted.

Statistical Design

Data were revised, coded, analyzed and tabulated using the number and percentage distribution and appropriate statistical methods.

The following statistical techniques were used:

Percentage, Mean value, Standard Deviation, Chi-square (X^2), T paired test, and Proportion Probability (P-value).

Significance of results

➢ When $P > 0.05$ it is statistically insignificant difference.
➢ When $P < 0.05$ or < 0.02 it is statistically significant difference.
➢ When $P < 0.01$ or $P < 0.001$ it is high statistically significant difference.

Limitation of the Study

1. One of the selected geriatric homes apologized to share in the study because of the privacy of their resident' elder's relatives. There for the total districts participants in the study were four districts.
2. One case drops out from the total samples due to death before completing the program.
3. Daily Log/Diary: This tool was supposed to be applied in the study through daily check by the participants (older adults) for 3 months after completing health education sessions. But, because more than half of the participants missed checking /completing this tool daily. This caused dropping such data due to the following reasons:
   - The participants forget to check this tool due to short memory span.
   - This tool should be checked frequently per day which was a burden on the participants.

Results:

Table (1): showed the inclusion criteria of Rome-III the highest symptom of chronic constipation was sensation of incomplete evacuations (86.2%) followed by straining (75.9%) and anorectal obstruction/blockage was among 58.6%of the cases.

Table (2): related to socio demographic characteristics of the study group. It shows that 67.2% of the older adults were female while 32.8% were male, their mean age was 73.9 ± 6.71 years old. Regarding educational level, 34.5% got intermediate, university or higher degrees. In relation to marital status 48.3% were widow. As regard to occupation, 44.8% were house-wives and 39.7% were retired. The table also shows that 93.1% were living in cities, 48.3% were living in geriatric homes for more than one year and 20.7% between 5-10 years. Also, 51.7% didn't have enough income. Finally, 31% didn't have children and 44.8% had two or three children.

Table (3): clarifies that 36.2% and (10.3%) had anal fissure in the past and currently respectively, while 60.3% had hemorrhoids in the past and currently 22.4%. According to the current diseases, there were 44.8% had diabetes, 63.8% had hypertension, 24.1% had heart problems, 72.4% had osteoarthritis, 15.5% had osteoporosis, and27.6% had bronchial asthma.

Figure (1): illustrate that (75.9%) had satisfactory awareness about chronic constipation post program compared to (34.5%) preprogram with statistically highly significant at P value < 0.001.

Figure (2): demonstrate a highly statistically significance difference between total older adult's constipation symptoms (PAC-SYM) score pre-health educational program divided as the following. Abdominal (55.2%), rectal (58.6%), stool symptoms (86.2%) all that items improved in post program assessment as (24.6%), (29.8%), and (38.6) respectively with p value< 0.001.

Figure (3): illustrate that there was highly statistically significant difference between total older adult's assessment score pre&post health educational program in relation to physical discomfort, psychosocial discomfort, (worries and concerns), and satisfaction at P value< 0.001.

Figure (4): clarifies that in preprogram represented 51.7%, 48.3% as Type-I, and Type-II from Bristol Stool chart which considered constipation types and 0.0% to Type-III which considered ideal stool consistency. While changed in post program to 29.8% and 42.1% Type-I and Type-II from Bristol Stool chart and raised to 28.1% as Type-III (ideal stool consistency) with highly significance difference between pre/post assessments with P value < 0.001).

Figures (5&6):illustrated the lifestyle practice to nutritional components and consumptions that (37.9%) of older adults were taking suitable weekly consumptions of the total rate of nutritional component (mainly food rich with fiber) preprogram which raised to (75.4%) post program with statistically highly significance $X^2 = 16.46$ and P value < 0.001.

Table (4): reveals statistically non-significance differences between age, gender, and education level of the studied sample and their total awareness score at P value > 0.05.

Table (1): Distribution of studied sample according to inclusion criteria Rome III (No.=58).

*Symptoms	No.=58	%
• Straining during at least 25% of the defecations	44	75.9
• Lumpy or hard stools in at least 25% of defecations	30	51.7
• Sensation of incomplete evacuations for at least 25% of defecations	50	86.2
• Sensation of anorectal obstruction/blockage for at least 25% of defecations	34	58.6
• Manual maneuvers to facilitate at least 25% of defecations (such as digital evacuation, support of the pelvic floor)	15	25.9
• Fewer than three bowel movement per week	31	53.4

Table (2): Distribution of studied sample according to their socio-demographic characteristics (No.=58).

Age	Frequency	Percent
60 - < 70	18	31.0%
70 - < 80	23	39.7%
≥ 80	17	29.3%
Mean age = 73.9 years ± SD = 6.71 years		
Gender	**Frequency**	**Percent**
Male	19	32.8%
Female	39	67.2%
Education Level	**Frequency**	**Percent**
Illiterate	10	17.2%
Read and Write	8	13.8%
Intermediate education	20	34.5%
University and higher	20	34.5%
Marital status	**Frequency**	**Percent**
Married	22	37.9%
Single	8	13.8%
Widow	28	48.3%
Occupation (Before entering the home):	**Frequency**	**Percent**
Free Business	9	15.5%
House wife	26	44.8%
Retired	23	39.7%
Residence	**Frequency**	**Percent**
City	54	93.1%
Village	4	6.9%
Duration of stay in the geriatric home:	**Frequency**	**Percent**
Less than a Year	8	13.8%
One - 4 years	28	48.3%
5 to 10 Years	12	20.7%
More than 10 Years	10	17.2%
Income	**Frequency**	**Percent**
Enough	28	48.3%

Not Enough		30	51.7%
Having Children		**Frequency**	**Percent**
NO		18	31.0%
Yes		40	69.0%
Number of Children		**Frequency**	**Percent**
NO		18	31.0%
One		4	6.9%
Two		14	24.1%
Three		12	20.7%
Four		6	10.3%
Five		4	6.9%

Table (3): Distribution of the studied sample according to their past and current medical history (No.=58).

| *Diseases	Past		Current	
	Frequency	**Percent**	**Frequency**	**Percent**
• Anal fissure	21	36.2%	6	10.3%
• Hemorrhoids	35	60.3%	13	22.4%
• Anal fall / Rectal prolapse	14	24.1%	6	10.3%
• Diabetes	10	17.2%	26	44.8%
• Hypertension	24	41.4%	37	63.8%
• Thyroid problems (Hyperthyroidism or Hypothyroidism)	6	10.3%	8	13.8%
• Heart problems	4	6.9%	14	24.1%
• Kidney problems	6	10.3%	11	19.0%
• Osteoarthritis	18	31.0%	42	72.4%
• Cerebrovascular stroke	6	10.3%	0	0.0%
• Parkinson's disease	0	0.0%	5	8.6%
• Diverticular disease (colorectal diverticulosis)	3	5.2%	0	0.0%
• Osteoporosis	0	0.0%	9	15.5%
• Bronchial asthma	0	0.0%	16	27.6%
• Epilepsy	0	0.0%	2	3.4%

*Responses are not mutually exclusive
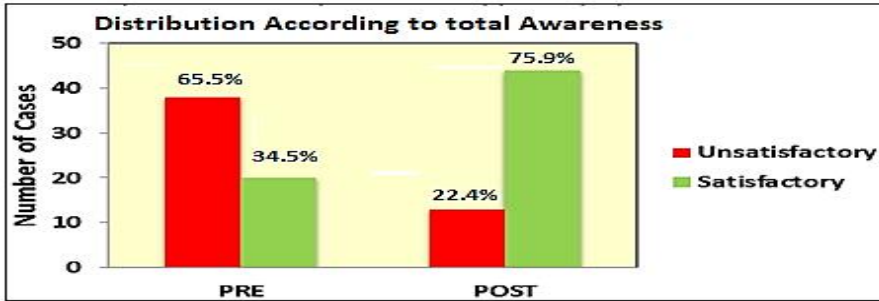
Figure (1): Distribution of the studied sample according to their total
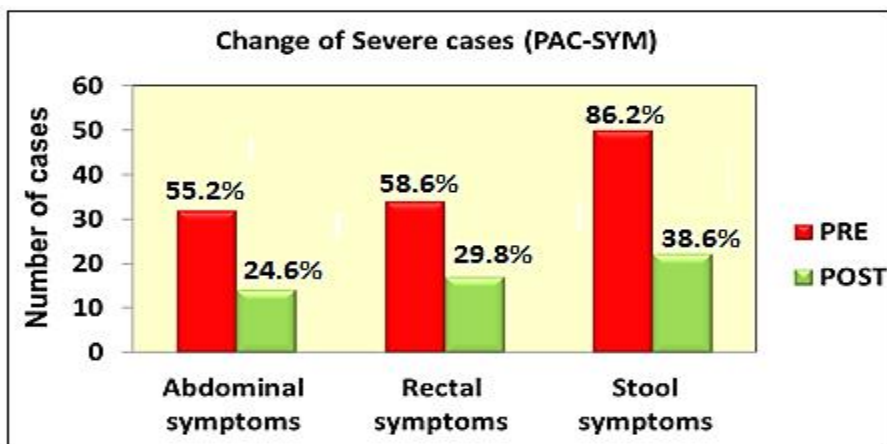
awareness score (Pre No.=58/Post No.=57) post health education program.

Figure (2): Distribution of the studied sample according to their total score of

constipation symptoms (PAC-SYM) (Pre No.=58/ Post No.=57) post health education program.
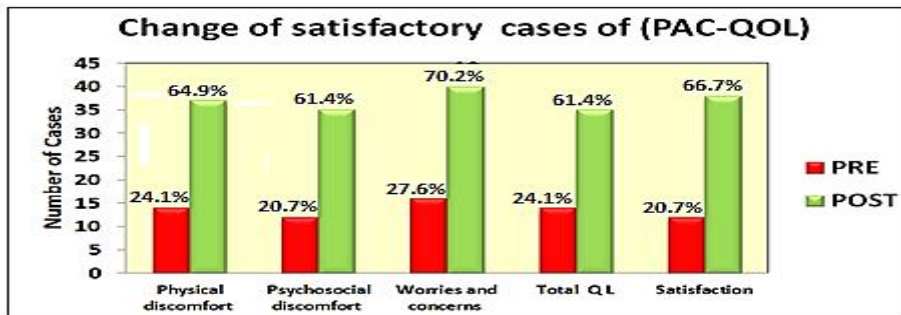

Figure (3): Distribution of the studied samples according to their total score of Quality of Life (PAC-QOL) (Pre No.=58/Post No.=57) post health education program.
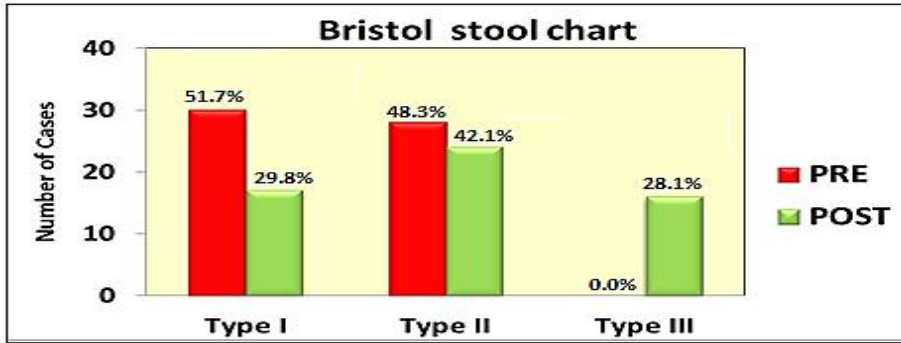
Figure (4): Distribution of the studied sample according to Bristol Stool Chart/Scale (Pre No.=58/Post No.=57) Post Health Education Program.
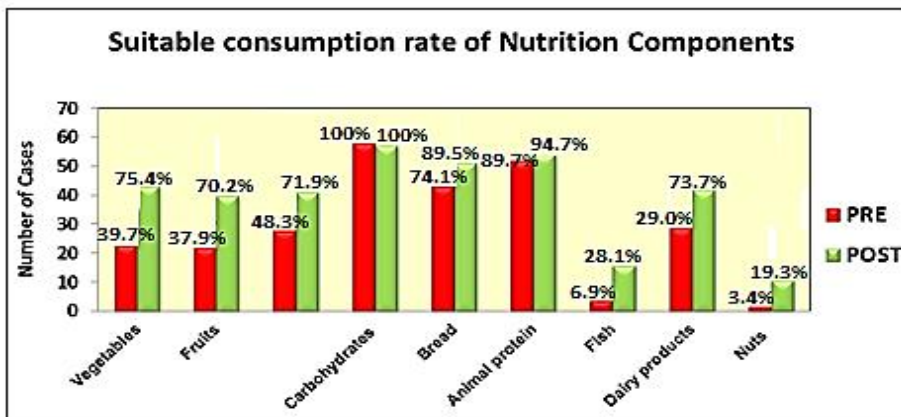

Figure (5): Distribution of the studied sample according to their suitable weekly consumption rate from nutritional component (Pre No.=58, Post No.=57) post health education program.
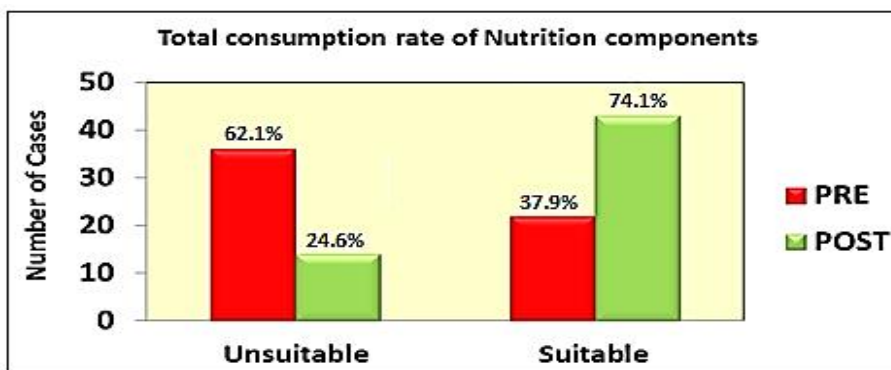

Figure (6): Distribution of the studied sample according to their total consumption rate from nutritional component (Pre No.=58, Post No.=57) post health education program.

Table (4): Relation between Total Awareness of Studied Sample and their Age, Gender, and Education Level (Post No. = 57).

Socio-Demographic Characteristics		Total Awareness		Total	Chi squared	P value
		Unsatisfactory	Satisfactory			
Age	60 to < 70	4 22.2%	14 77.8%	18 100.0%	1.73	0.4212 NS
	70 to < 80	7 30.4%	16 69.6%	23 100.0%		
	80 or above	2 12.5%	14 87.5%	16 100.0%		
Gender	Males	5 27.8%	13 72.2%	18 100.0%	0.37	0.5434 NS
	Females	8 20.5%	31 79.5%	39 100.0%		
Education level	Illiterate	2 20.0%	8 80.0%	10 100.0%	0.29	0.9621 NS
	Read & write	2 25.0%	6 75.0%	8 100.0%		
	Intermediate Education	5 26.3%	14 73.7%	19 100.0%		
	University or higher	4 20.0%	16 80.0%	20 100.0%		
Total		13 22.8%	44 77.2%	57 100.0%		

Discussion:

Regarding Rome III Diagnostic Criteria for Assessment Chronic Constipation, the study findings was evident that the highest symptom of chronic constipation according to Rome III criteria was sensation of incomplete evacuations (86.2%) followed by straining (75.9%) and anorectal obstruction/blockage (58.6%). Compared with study done by **Pare et al., (2011)** who found the highest symptom of chronic constipation according to Rome III criteria was straining (81%) followed by hard stool (72%) then sensation of incomplete evacuations (54%). These differences due to the definition of constipation as a concept depend on subjectivity meaning and differ from person and physicians.

Regarding Socio-Demographic Characteristics of Older Adults with Chronic Constipation, the study sample age ranged between (60 to ≥ 80 years old) with mean age (73.9 years ± SD = 6.71 years old), regarding to gender two-thirds, of the older adults were female while one-third were males This result is almost similar to a study done by **Chen et al., (2014)** who found in his studied sample that their age ranged between (65 to 99 years old) with main age (80.7 ± 7.6 years). The finding of the present study also agreed with **Andy et al., (2016)** who indicate that the greater prevalence of constipation in women than men which is similar to findings of other studies. Female-to-male ratios ranged from 1.01 to 3.77 (median 2.0).

Regarding associated medical history (current & past diseases), the result reflected that there was a high percentage of chronic constipation respectively toward osteoarthritis, hypertension, diabetes, and bronchial asthma This result go in the same line with study conducted in India by **Rooprai et al., (2017)** who studied and evaluated prevalence of functional constipation (FC) and irritable

bowel syndrome-constipation (IBS-C), his result releaved the prevalence of constipation (75.6% out of total 925) with higher proportion history of hypertension and diabetes.

Otherwise a study conducted in Norway by **Blekken et al., (2016)** who studied the prevalence and associations of constipation with laxative use among NH patients. They found that the prevalence of constipation was 24.1%, and associated with impaired balance, urinary incontinence, Parkinson's disease, and hypothyroidism. The current study agreed with the study conducted in India by **Rooprai et al., (2017)** which may be attributed similarities between the Egyptian population and Indian population as sedentary lifestyle, have a higher frequency of eating junk food, leading more stressful lives, a higher frequency of comorbidities leading to high consumption of medications; which further results in altered bowel function and an increased likelihood of constipation. While the current study disagree with the study conducted in Norway by **Blekken et al., (2016)** which may be due to the differences in lifestyle behavior between the two countries and study samples.

In relation to the total awareness score the present result revealed that the majority of the participants under study were correct their awareness score in post program assessment. This finding agreed in some aspects and disagreed in other aspects with a study done by **Lee et al., (2014)** in South Korea to study the Constipation Misperception (CM). The study showed that adults with self-reported constipation perceived constipation differently. A large portion had a varying degree of CM. These observations revealed that some patients lack knowledge about constipation problems and its definition.

In relation to total score of constipation symptoms according to patient assessment of constipation symptoms **(PAC-SYM).**The present study indicated that there was improvement in total score of older adults among abdominal, rectal, and stool symptoms, after implementing the health educational program as there were highly statistically significant differences between the pre/post test**.** This finding of the current study agreed with study done by **Ostaszkiewicz et al., (2010)**, his study included 27 community-dwelling adults aged between 35-83 years old who presented with lower urinary tract symptoms and constipation and receiving individualized conservative treatment for constipation. They showed significantly reduced overall severity of constipation symptoms measured by the PAC-SYM ($P < 0.01$).

Also, another study conducted by **Nour-Eldein et al., (2014)** on 23 elderly people in nursing homes experiencing functional constipation showed highly statistically significant improvement in post-educational intervention on their lifestyle modifications, of the severity of the symptoms of constipation according to PAC-SYM, the improvement including the total score and sub scores.

In relation to the total score of quality of life among the older adult's according to patient assessment of constipation quality of life scale**(PAC-QOL).** The present study indicating that there was improvement in total score of older adults among physical discomfort, psychosocial discomfort, (worries and concerns), and satisfaction of quality of life after implementing the health educational program **.**

This finding of the current study agreed with study done by **Ostaszkiewicz et al., (2010),** in which the participants

reported statistically significant improvements in their overall QOL as measured by the PAC-QOL with (P < 0.01).

While the finding of the current study agreed in some aspects and disagreed in other aspects with a study done by **Nour-Eldein et al., (2014)**which showed statistically significant improvement of patient QOL in post-intervention according to PAC-QOL in satisfaction scores and total dissatisfaction scores with its sub scores except in the psychological domain.

Regarding to Bristol Stool chart (BSC) the present study shows before implementing of the health education program 51.7% of older adults reported their stool form like Type-I 'separate hard lumps, like nuts (hard to pass)' which considered very constipated according to (BSC). While after implementing the health education program this percentage decreased to 29.8% and the type of stool form changed to Type-III with 28.1% which considered 'normal/ideal stool consistency' **.**

This finding went in the same way with a study done by **Ayaz and Hisar, (2014)** using the (BSC) they found that 71.5% of the women stated their stool form to be 'sausage-shaped, but lumpy' before the education program, and the percentage had dropped to 17.1% after the education program as the stool type of 'separate hard lumps, like nuts (hard to pass)' was not observed.

Regarding to suitable weekly consumption of nutritional components, the current study represented that 39.7%, 37.9%, 48.3%, and 3.4% of older adults respectively were taking suitable weekly consumption of foods rich in fibers (vegetables, fruits, legumes, and nuts) in preprogram. While increased to 75.4%, 70.2%, 71.9%, and 19.3% respectively after health education program implementation. In addition to the present study, indicated (37.9%) of older adults were consuming suitable weekly consumptions of the total rate of nutritional components in preprogram raised to (75.4%) after implementation of the health education program.

The result of the current study agreed with the results of other studies done by **Menees et al., (2015), Harari et al., (2009) & Spinzi et al., (2009)**who emphasized that the first steps/line in the treatment of constipation include increasing intake of dietary fibers and the use of a fiber supplement. This goal can be achieved by recommending patient to integrate the diet with more fruits, vegetables and nuts in addition to adding varying amounts of bran and gradually increasing intake of fibers up to 30 g/day as suggested by the health team.

Moreover, the paper done by **Ford et al., (2014)** from the American College about Gastroenterology on constipation had concluded that fibers are effective treatment in adults, but adverse events, bloating, distension, flatulence, and cramping may limit their use, especially if increases in fiber intake are not introduced gradually.

Another preliminary trial by **Lawton et al., (2013)**found that eating a breakfast cereal containing 5.4 g of fiber (mainly from wheat bran) daily for two weeks had beneficial effects on bowel function in people whose regular diets included less than 15g of fiber per day; as improvements in constipation, bloating, sluggishness, and digestive discomfort were noted.

On the light of the previous results regarding the nutrition pattern and

consumption, chronic constipation improved after implementation of the health education program due to improvement on their awareness and healthy nutritional practice that help in modifying their nutritional pattern.

In relation to statistical association between total awareness score and socio-demographic characteristics, the present study found statistically non-significance differences between age, gender, and education level of the studied samples and their total awareness in geriatric homes . This finding coincide with **Blekken et al., (2016)** who reported that no significant association between either age or gender and constipation level of knowledge among NH patients. These are contradict when compared with the general population where constipation is more prevalent among women and where age is considered a risk factor by **Mugie et al., (2011)**.

Conclusion:

On the light of the results and answers on research hypothesis the study was concluded that:

The health educational program showed remarkable improvement in older adult's awareness, decreased the severity of constipation symptoms, improved discomfort able subscales of quality of life and raised satisfaction subscales through lifestyles practices modifications in post health education program implementation.

The relation between total awareness of the studied sample and their total quality of life, revealed no statistically significant difference between total awareness of the studied sample and their patient assessment of constipation quality of life (PAC-QOL) discomfort subscales score. While, there were statistically significant difference

between total awareness and satisfaction subscale score post program implementation.

Recommendation:

The findings of this study highlight the following recommendation:

1. Application of health education programs based on need assessment (pre/test) to improve the quality of life of older adults through lifestyle modifications known as the trio (increase fiber, fluids, and exercise) and encourage healthy toilet habits & training is often recommended for promoting a healthy bowel.

2. Raising public awareness through educational campaigns and mass media about healthy life style for older adults in the geriatric homes needed to improve their quality of life.

3. The importance of using the Bristol stool chart as daily routine by health care providers in geriatric homes, to observe and differentiate between the different seven types of this chart to define the ideal/normal of bowel movement output.

4. Increasing the awareness of the older adults in different geriatric homes regarding the effect of chronic constipation on quality of life and daily living activities, and the hazards of laxative drugs abuse without medical instructions.

5. Importance of using the screening alarm symptoms (red flag) of chronic constipation by health services providers in geriatric homes and by nurses during the older adult's normal daily activities or follow up because prevention is better than cure.

6. More researches on a wide scale are needed to investigate the effect of similar health education program on preventing / managing constipation among older adults.

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