

Lifestyle Modifications to Reduce Constipation among the Community Dwelling Elderly People

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Abstract: Constipation is a common digestive complaint in the elderly people. It has a significant effect on their daily living and well-being. Lifestyle modification is the first step for effectively manage it. So, the elderly people should maintain a healthy lifestyle to reduce constipation.

The aim of the study was to identify the causes of constipation and to evaluate the effect of lifestyle modifications on reducing constipation among the elderly people.

Methods: A quasi-experimental **design** was adopted.

Subjects: A total of 120 elderly persons were recruited from two villages in Menoufia Governorate, Egypt. Four **tools** were used for data collection.

Results: the mean age of the sample was 65.8 ± 6.9 years old. Causes for constipation included ignoring the urge of defecation (70.0%), irregular bowel habits (66.7%), inactivity (63.3%), presence of chronic disease (60.0%), colon problem (50.0%), insomnia (53.3%), stress (53.3%), nervousness (43.3%), drugs and indigestion (40.0%). Lifestyle modifications that help to reduce constipation were increasing of more vegetables in the diet, eating bran bread, drinking more than eight glasses of water daily, reducing caffeine intake, eating the meals at a regular time, and eating the breakfast meal and physical activity. There was a statistically significant reduction of constipation associated symptoms from pre to posttest. The participants (63.3%) changed their habits and maintain a regular toilet routine.

Conclusion: Healthy lifestyle is recommended. It can reduce constipation associated symptoms. The elderly people who changed their lifestyle had normal bowel elimination per week (2.6 ± 0.8).

Recommendations: Changes in lifestyle such as increasing the daily intake of vegetables, fruits, and water are very important to reduce constipation. Also, the community health nurse should educate the elderly people to schedule their bowel elimination at the same time every day and avoid ignoring the urge.

Key words: lifestyle, Constipation, Community dwelling, Elderly people.

I. Introduction

The chronological age of sixty-five years had been accepted as a definition of 'elderly person' by most of the developed world countries, but this does not adapt well to the situation in Africa. United Nations agreed that sixty years and more refers to the older population (WHO, 2014). The elderly people in Egypt who are aged from 60-64 years old constituted about 6.7% while persons aged 65 years and more constituted about 5% with life expectancy 73.45 years old (CIA, 2014). The population of those aged 65 years and older is expected to increase to 88.5 million by 2050; those 85 and older will double to 9.6 million during the same period (U.S. Census Bureau, 2011). It means that elderly people increased in number. So, nurses will care for a higher percentage of older adults with chronic conditions such as constipation (Toner & Claros, 2012). Also, the demand for home care is expected to grow in the coming years. Home visits to elderly people should focus on their needs. The role of the home care worker is a valuable one to many older people and their families (NICE, 2015). Normal patterns of bowel elimination vary widely from individual to another, some people believe they are constipated if a day passes without a bowel movement; for others, every third or fourth day is normal (Cachero-Salavrakos & Klopp, 2012). Constipation means passing of three or fewer bowel movements per week. It is more prevalent in women than in men (Jamshed et al., 2011). It includes unsatisfactory defecation, infrequent stools, or difficulty with stool passage. In elderly people, constipation may be associated with fecal impaction and fecal incontinence (Satish, 2015). Complications of constipation can cause serious health problems and affect negatively on their health.

Constipation is a common prevalent problem among the elderly people (Cachero-Salavrakos & Klopp, 2012). Its prevalence ranges from 0.7% to 81% around the world (Mugie et al., 2011). Most people experience occasional constipation, but about fourteen percent of adults suffer from chronic constipation (Jamshed, 2011; Quigley, 2011; Basilisco, 2013; Rao & Sifuentes, 2014). Chronic constipation can affect from 2% to 27% of the population (Sanchez & Bercik, 2011). The prevalence increases with age and differs

among settings. In individuals 65 years of age or older in the community, the prevalence is 26% for women and 16% for men. This rate increases to 34% for women and 26% for men in those 84 years of age and older (Gallegos-Orozco et al., 2012). Another study reported that the prevalence was 50% in community-dwelling elderly and 74% of nursing home residents (Satish & Jorge, 2010; De Giorgio et al., 2015). The health care costs of constipation are significant as evidenced by the hundreds of million dollars spent yearly on laxatives (Sanchez & Bercik, 2011). Constipation leads to large individual healthcare costs, represents a burden to healthcare delivery systems, loss of work-related productivity, decreased quality of life (Satish & Jorge, 2010; Juan et al., 2011), and contributes to complications such as fecal impaction, ulcers and sometimes need hospitalization to correct these problems (Kimberly, 2007).

Chronic constipation can be divided into primary and secondary types (Jamshed et al., 2011). The primary or functional constipation is a common condition without any specific physiological causes. The prevalence of functional constipation varies from 2.4% to 27.2% (Iraji et al., 2012). It can be classified as normal transit, slow transit, or outlet constipation (Jamshed et al., 2011). It affects 17 to 40% of the elderly clients (Rao & Go, 2010; Fosnes et al., 2011). The causes of secondary chronic constipation include medication use, and medical conditions such as hypothyroidism or irritable bowel syndrome, and neurological problems and serious diseases of the large intestine such as colon cancer (Jamshed et al., 2011; Leung & Rao, 2011; Volta & Villanacci, 2011; Rao & Sifuentes, 2014).

Constipation is a symptom, not a disease so, effective treatment requires determining the cause at first (World Gastroenterology Organization, 2010). It caused by many different diseases and health problems (Tresca, 2015). These causes are multifactorial and can be influenced by physical, psychological, physiological and environmental factors (Kyle, 2011). Constipation can be caused by immobility, drugs, underlying diseases, impaired anorectal sensation, ignoring the urge of defecation (Satish & Jorge, 2010), inadequate fluid intake, low-fiber diet, inactivity, lack of privacy, pain, laxative abuse (Cachero-Salavrakos & Klopp, 2012), prolapsed uterus, sedentary lifestyle, old scarring, mega colon which are not all cancerous, diuretics, analgesics and antihypertensive medications (Amir, 2011; Lee, 2015; NICE, 2015). All these factors contribute to its increased prevalence in older adults (De Giorgio et al., 2015). So, it is very important to identify the causes of constipation. It will be the base and first line for satisfactory management.

Symptoms associated with constipation include passing hard stool, feeling of incomplete evacuation, strain, a bloated abdomen, blood streaks in stool from tiny fissures, loss of appetite (Udesky, 2015), delayed gastric emptying, (Bharucha et al., 2013), abdominal cramping, flatulence, heartburn, nausea and vomiting may occur (Wald, 2008; Kolar et al., 2014). The evaluation of constipation includes a history and physical examination to rule out warning signs and symptoms. These include evidence of bleeding, weight loss, iron deficiency anemia and rectal prolapse. So, referral for additional evaluation and diagnosis may be necessary (Jamshed et al., 2011). Also, early treatment of constipation associated symptoms is very important to prevent complications.

Health care workers especially geriatric nurse need to be aware of the frequency of constipation and defecation problems in this population to maintain early detection and proper management of this health problem (Gallegos-Orozco et al., 2012). In the elderly there is usually more than one etiologic mechanism, requiring a multifactorial treatment approach. The majority of elderly clients would respond to diet and lifestyle modifications reinforced by bowel training measures (De Giorgio et al., 2015). A gradually increasing intake of fluids and fibers up to 30 g/day is suggested (Harari, 2009; Menees et al., 2015). This goal can be achieved by recommending the client to integrate the diet with more fruits, vegetables, and nuts (Harari, 2009). Dietary management of constipation includes eating high-fiber foods such as whole grains, vegetables, nuts, and fresh or dried fruits such as figs, berries, apricots, or prunes. If the elderly person has a problem with chewing or swallowing of the raw vegetables, then he can eat them cooked. It also includes cut down on high-fat foods such as meat and cheese and refined sugars, drinking eight glasses of water daily or more, and limiting caffeinated drinks such as colas, coffee, and tea are necessary (Udesky, 2015). The elderly client should practice most of these dietary modifications to reduce constipation associated symptoms and improve the bowel elimination.

Primary prevention is very important in the field of community health nursing. It includes health promotion and the specific protection measures. The elderly person should maintain healthy habits to prevent constipation. Many studies suggested that the right diet, drinking of water, and getting regular exercise as daily walk are important steps to prevent constipation (Rodriguez, 2009; Tresca, 2015; Udesky, 2015). A number of clients would believe that they need to have a bowel movement every day; counseling on simple lifestyle changes may improve their perception of bowel regularity and a diary log reporting on stool pattern and consistency may be helpful as well (Menees et al., 2015). So, the studies concluded that the elderly people should practice healthy lifestyle, exercises, increase the intake of fresh vegetables and fruits because it is a good source of fiber, maintain a regular meals time, make time for bowel movements, limit laxative use, and avoid caffeinated drinks are essential to reduce constipation (Rodriguez, 2009; Markland 2013; Borre et al., 2015; Chilson, 2015).

Significance of the Study

Constipation is the most common digestive complaint in the general population. It increases with age and associated with large economic costs (Sethi et al., 2014). It represents an economic burden for the elderly people and healthcare providers (Zeitoun et al., 2013). The prevalence of constipation differs among settings. In individuals 65 years of age or older in the community, the prevalence is 26% for women and 16% for men (Gallegos-Orozco et al., 2012). This rate increases to 34% for women and 26% for men in those 84 years of age and older (Fleming & Wade, 2010; Gallegos-Orozco et al., 2012). It can significantly interfere with their daily living and well-being (Sanchez & Bercik, 2011). Lifestyle modifications considered the first step of a comprehensive treatment to effectively manage constipation (Tack et al., 2011). Also, dietary management remains the most effective treatment for constipation (Cachero-Salavrakos & Klopp, 2012; Satish, 2015). In addition, lifestyle modification is widely accepted and recommended by many researchers as first-line therapy (Nour-Eldein et al., 2014). So, elderly people should maintain a healthy lifestyle which includes many activities such as increasing physical activity (Selby, 2010), increasing fluids and fibers intake (Markland, 2013; Ayaz, 2014 ; Borre et al., 2015), choose whole-wheat and whole-grain breads (Rodriguez, 2009), regular exercises (Rao & Sifuentes, 2014), maintaining regular morning toileting (Gallegos-Orozco et al., 2012), and limiting caffeinated drinks as colas, coffee and tea (Udesky, 2015). The community health nurse especially the geriatric nurse has an important role in the management of constipation. She can provide health educational instructions to the elderly people about maintaining of a healthy lifestyle and changing the bad habits to reduce constipation. Also, she can follow up them through home visits to ensure their improvement and increasing their awareness about benefits and importance of the healthy lifestyle for their health and wellbeing.

Aim of the Study

- 1- To identify the causes of constipation among the elderly people.
- 2- To evaluate the effect of lifestyle modifications on reducing constipation among the elderly people.

Research Hypothesis:

- 1- Lifestyle modifications will reduce constipation associated symptoms.
- 2- Elderly people who will change their lifestyle will have normal bowel elimination.

II. Subjects And Methods

2.1 Research design: Quasi-experimental research design with pre- posttest was used to identify the causes of constipation and to examine the effects of lifestyle modifications on reducing constipation among the elderly people. This design is one type of the quasi-experimental designs in which data collected from research subjects both before and after introducing the intervention (Nieswiadomy, 2012).

2.2 Setting: The study was conducted at two villages (Kafr tanbedy and Betebs) in Shebin Elkom District, Menoufia Governorate, Egypt.

2.3 Research sample: A convenience sample consisted of 120 elderly persons, this number was chosen through home visits and selection of subjects who fulfilling the following criteria:-

- a) Aged 60 years and more.
- b) Suffer from constipation (Identified according to Rome III Constipation Diagnostic criteria)
- c) Both sexes
- d) Able to practice daily living activities
- e) Alert and agree to participate in the study.

Exclusion criteria:

The researchers excluded the elderly who had neurological disorders as stroke, hypothyroidism, gastrointestinal obstruction, colorectal cancer, chronic renal failure, depression, dementia, or acute confusion.

2.4 Tools for data collection: four tools were used to collect the data from the elderly persons through home visits and included the following:

I. Structured interview questionnaire: It was designed by the researchers based on the review of the related literature. It included questions related to socio-demographic characteristics, medical history, and bio-physiological measurements. It included three parts:

Part 1:- Socio-Demographic characteristics such as age, sex, marital status, educational level, occupation, live alone or with family, and income. It included fourteen questions (from Q1- Q14).

Part 2:- Medical history: This included questions about the complaints, past and present medical histories of chronic disorders and medications. It included eighteen questions (from Q15- Q32).

Part 3:- Bio-physiological measurements: This included blood pressure, pulse, weight, height and body mass index (BMI). The BMI was estimated by dividing weight in kilogram by squared height in meters [BMI = weight (kg)/height (m)²]. It included four questions (from Q33- Q36).

2- Constipation assessment questionnaire: It included symptoms such as passing a hard stool, pain during defecation, feel incomplete evacuation, strain, a bloated abdomen, blood streaks in stool from tiny fissures and loss of appetite. Also, it was included the causes of constipation such as analgesics, antihypertensive, antiemetic's, and antispasmodic medications, laxatives use, lack of privacy, pain, inactivity, inadequate fluid intake, low fiber diet, bowel habits and anal complains. It included twenty-seven questions (from Q37 – Q63).

3- Rome III Constipation Diagnostic criteria scale: it was developed by Longstreth et al., (2006): It was used to identify if the client had constipation or not. The client must have two or more of the following:

- a. Straining during at least 25% of defecations
- b. Lumpy or hard stools in at least 25 % of defecations
- c. The sensation of incomplete evacuation for at least 25% of defecations
- d. The sensation of anorectic obstruction/blockage for at least 25% of defecations
- e. Manual maneuvers to facilitate at least 25% of defecations (e.g., digital evacuation, support of the pelvic floor)
- f. Fewer than three defecations per week

2- Loose stools are rarely present without the use of laxatives

* Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis (**Longstreth et al., 2006**).

4- Lifestyle assessment questionnaire: It was developed by the researchers after extensive literature review. It included questions about the practice of physical activity that mean walking at least 30 minutes per day for four days or more per week. Dietary habits questions such as eating regular meals, the number of meals per day, eating the breakfast meal, use excess spices, bread type, tea/ caffeine intake, vegetables, and fruits intake, fluid intake, fast food, eating too much fried foods, method of cooking, relaxation and sleep pattern. Bowel habits questions such as regularity of elimination use toilet only when feeling need, frequency of defecation, and ignorance of the urge of defecation. It included thirty-seven questions (from Q64 – Q100).

2.5 Validity and reliability of the tools:

The tools were developed by the researchers after reviewing of the related literature and tested for its content validity. Validity indicated the degree to which the tool measures what it is expected to measure. Therefore, in this study, questionnaires content validity was determined by three experts in community health nursing and the necessary modifications were done. Reliability of the tool was measured for testing the internal consistency of the tools by administrating the same tools to the same subject under the similar condition on one or more occasion (test-retest reliability).

2.6 A pilot study: It was conducted on 10% of the participants. This sample was excluded from the total sample. The pilot study was carried out to test the applicability and clarity of the constructed questionnaire and detect any problems that might arise during the actual collection of data. Then the necessary modifications and clarifications of some questions were done according to the results of the pilot study and final form was developed and used in data collection.

2.7 Administrative approval:-

The official letter from Faculty of Nursing in Shebin Elkom, Menoufia University was prepared and delivered to under-secretary of Health in Menoufia Health Directorate for the approval for the collection of data from selected villages. After that, data collection was carried out through three phases.

2.8 Procedure for data collection:

Interviewing and assessment phase: Data collection for this study was carried out from the first of October 2013 to the end of March 2014. After obtaining approval and informed consent to conduct the study, data was collected from elderly persons who fulfilled the selection criteria two days per week for six months through home visits by interviewing questionnaire with each subject individually by using the study tools which included socio-demographic data, complaints, past and present medical histories of chronic disorders, causes of constipation, lifestyle measures and measurements of blood pressure, pulse, weight and height. The aim of the study was explained for each subject to give assurance of confidentiality of information offered, and to gain their maximum cooperation. The average time taken for completing each sheet was around 25 - 30 minutes; this was depending on the response of the subject.

Implementation phase: The obtained information used as the baseline assessment (pretest), then the researchers gave nursing instructions for each subject individually in his or her home about constipation and the average time taken for giving the instruction was 20- 25 minutes. This nursing instructions included information about definition, causes, signs and symptoms and lifestyle changes to manage constipation such as increasing activities, importance of exercises as daily walk about thirty minutes, increasing fluids intake specially water about 8 glasses of water or more, increasing fibers intake as vegetables and fruits, regular meal times, eating breakfast, maintain regular time for bowel elimination specially in the morning, avoid ignoring the urge and maintaining good sleep habits. At the end of the nursing instructions, each subject was given a guide booklet in the Arabic language; this booklet was developed by the researchers after reviewing the related literature and included information, colored pictures related to lifestyle changes to reduce constipation.

Evaluation phase: All participants were evaluated by posttest after one month. The researchers performed posttest by using the same pretest questionnaires to evaluate the effect of lifestyle modifications on reducing of constipation.

4. Human rights and ethical considerations: - The subjects were chosen according to the criteria and they were interviewed after their informed consent was obtained from the elderly clients who were willing to participate in the study. The participants were informed that participation in this study is voluntary; they can withdraw at any time from the study without giving reasons. The investigators explained the aim of the study to all elderly clients in the study sample. They reassured that any obtained information would be strictly confidential.

III. Statistical Analysis

The collected data were scored, tabulated and analyzed using Statistical Package for the Social Science (SPSS) program version 20. Descriptive as well as parametric inferential statistics were utilized to analyze data pertinent to the study. The level of significance was set at $p < 0.05$. Paired sample t- test and Chi-square test were used to analyze the data.

IV. Results

The study sample included 120 elderly persons from two villages in Shebin Elkom District, Menoufia Governorate, Egypt with the mean age was 65.8 ± 6.9 years old.

Table (1) shows that about three-quarters of them (73.3%) were females, 60.0% were married and most of them (80.0%) lived with their families.

Table (2) shows the commonly reported causes of constipation among the studied elderly individuals. There were many causes of constipation such as ignoring the urge of defecation (70.0%), irregular bowel habits (66.7%), obesity (69.2%), inactivity (63.3%), presence of chronic disease (60.0%), colon problem (50.0%), insomnia (53.3%), stress (53.3%), nervousness (43.3%), drugs (43.3%), and indigestion (40.0%).

Table (3) illustrates that more than one-third of the elderly persons who had constipation (36.7%, 43.3) took analgesics and antihypertensive drugs respectively. Also, more than twenty-five percent (26.7%) of them took antihistamines and antacids with a mean number of medications taken were 3.32 ± 1.4 per day.

Table (4) explains that the common reported constipation associated symptoms were passing of hard stool (100.0%), pain during defecation (63.3%), flatulence (63.3%), laziness (56.7%), straining (43.3%), and feeling of incomplete evacuation (33.3%).

Table (5) reveals that the main lifestyle modifications that help the studied elderly people to reduce their constipation were increasing of more vegetables in diet, eating bran bread, drinking more than eight glasses of water daily, reducing caffeine intake, eating the meals at regular time, eating the breakfast meal, and maintaining physical activity with statistically significant difference between the pre and post changes in their lifestyle ($p < 0.001^*$).

Table (6) shows that there was a statistically significant reduction of constipation associated symptoms from pre to posttest ($p < 0.001^*$). While Table (7) shows that the mean frequency of defecation increased from 1.8 ± 0.4 during the pretest to 2.6 ± 0.8 during the posttest. Also, about two-thirds of the elderly people (63.3%) changed their habits and maintained a regular toilet routine and about three quarters of them (73.3%) avoid ignoring the urge during the posttest. As regards to laxative use, the participants reduced their use of laxatives from 26.7% to 16.7%. Also, there was a statistically significant change in bowel habits and bowel elimination from the pretest to posttest ($p < 0.001^*$).

Figure (1) illustrates that seventy percent of the sample were ignored the urge of defecation and delayed it, but in the posttest this percent reduced to 26.7 % and most of them (73.3%) go to the bathroom directly when they feel the urge.

Table (1): Distribution of Socio-demographic Characteristics of the Studied Sample (n=120).

Socio-demographic Characteristics	N	%
Age (In years): =mean ± SD	65.8 ± 6.9	
Sex: Male	32	26.7
Female	88	73.3
Marital status: Single	4	3.3
Married	72	60.0
Widow	44	36.7
Level of education:		
Illiterate	52	43.3
Primary	32	26.7
Secondary	36	30.0
University	0	0.0
Working condition:		
Still Work	16	13.3
Not work	104	86.7
Income: Easily enough	20	16.7
Enough	80	66.6
Not enough	20	16.7
Living condition: Alone	24	20.0
Live with family	96	80.0

Table (2): Distribution for Causes of Constipation among the Studied Sample (n=120).

Causes	N	%
Chronic disease	72	60.0
Diabetes mellitus	44	36.7
Colon problem	60	50.0
Gallbladder problems	12	10.0
Insomnia	64	53.3
Stressors	64	53.3
Nervousness	52	43.3
Indigestion	48	40.0
Ignore the urge of defecation	84	70.0
Irregular bowel habits	80	66.7
Laxative abuse	32	26.7
Inactivity	76	63.3
Obesity	83	69.2

Table (3): Distribution of Drugs Associated Constipation among the Sample (n=120).

Drugs associated constipation	N	%
Analgesics	44	36.7
Antihistamines	32	26.7
Antihypertensive	52	43.3
Iron supplements	12	10.0
Antacids	32	26.7
Number of medications taken/day	3.32 ± 1.4	

Table (4): Distribution of Constipation Associated Symptoms among the Sample (n=120).

Constipation associated symptoms	Male n=32	Female n=88	Total n=120
Frequency of defecation	1.8 ± 0.4	1.9 ± 0.3	1.8 ± 0.4
Hard stool	100.0	100.0	100.0
Pain during defecation	62.5	63.6	63.3
Blood with stool	12.5	13.6	13.3
Flatulence	50.0	68.2	63.3
Straining	50.0	40.9	43.3
Feel incomplete evacuation	25.0	36.4	33.3
Laziness	50.0	59.1	56.7
Loss of appetite	50.0	22.7	30.0

Table (5): Distribution of Lifestyle habits of the Elderly people at Pre and Post intervention (n=120).

Lifestyle	Pre	Post	p-value
Dietary:	%	%	
Many vegetables	23.3	67.5	P<0.001*
Many fruits	36.7	56.7	P<0.05*
Too much protein	16.7	13.3	P<0.05*
Eat bran bread	36.7	86.7	P<0.001*
Spices	56.7	16.7	P<0.001*

Pickles	73.3	46.7	P<0.05*
Methods of cooking:			
Foundry	63.3	10.0	P<0.001*
Fried	13.3	63.3	
Boiled	20.0	6.7	
Grilled	3.4	20.0	
Drinking water (cups/day)	3.4 ± 1.3	8.03± 1.9	P<0.001*
Drinking tea(cup/day)	3.1 ± 1.6	2.03 ± 0.9	P<0.001*
Drinking coffee	30.0	16.7	P<0.001*
Inactivity	63.3	36.7	P<0.05*
Regularity of meals time	43.3	80.0	P<0.001*
Eat breakfast meal	36.7	83.3	P< 0.001*
Sleep: normal	46.7	50.0	p>0.05
insomnia	53.3	50.0	
Sleep quantity:	7.9 ± 1.3	7.7 ± 0.8	
Exercises (Walking)	36.7	63.3	P<0.05*

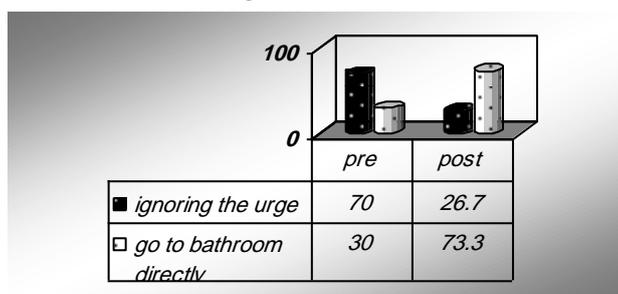
Table (6): Distribution of Constipation Associated Symptoms at Pre and Post intervention (n=120).

Symptoms	Pre	Post	p-value
Hard stool	100.0	53.3	P<0.05*
Pain during defecation	63.3	30.0	P<0.001*
Blood with stool	13.3	3.3	P<0.001*
Flatulence	63.3	23.3	P<0.001*
Straining	43.3	16.7	P<0.001*
Laziness	56.7	30.0	P<0.001*
Loss of appetite	30.0	20.0	P<0.001*

Table (7): Distribution of Bowel Habits for the Studied Sample at Pre and Post intervention (n=120).

Bowel habits and movements	Pre	Post	p-value
Frequency of defecation/week	1.8 ± 0.4	2.6 ± 0.8	P<0.001*
Regular toilet routine:			P<0.001*
Yes	33.3	63.3	
No	66.7	36.7	
Ignore the urge:			P<0.001*
Yes	70.0	26.7	
No	30.0	73.3	
Laxative use	26.7	16.7	P<0.001*

Figure (1): Pre and Post Changes in Bowel Habits for the Studied Sample.



V. Discussion

Constipation is a common problem within the community setting. It is important for community health nurses to remember that constipation is a symptom and not a disease (Bardsley, 2015). It is a common gastrointestinal disorder with the prevalence in the general population of approximately twenty percent. In the elderly population, the incidence of constipation is higher compared to the younger population. It is common in females than males (Roque & Bouras, 2015). The geriatric nurse has an important role in helping the elderly people to maintain their health status and management of their health problems. The aim of the present study was to identify the causes of constipation and to evaluate the effects of lifestyle modifications on reducing constipation among the elderly people. The mean age of the studied sample was 65.8 ± 6.9 years old. Also, it was showed that seventy-three percent of them were females. This was consistent with the evidence from a Swedish population study; it was found that women were twice as likely as men to regard infrequent bowel elimination, whereas equal magnitudes of men and women regarded pass of hard stools, straining during bowel elimination and pain during defecation (World Gastroenterology Organization, 2010). Additionally, Nour-Eldein et al., (2014) assessed the effect of lifestyle modification on the severity of constipation and quality of

life of elders in nursing homes at Ismailia city, Egypt. They found that more than two-thirds of elderly with constipation were females. Moreover, **Bouras & Tangalos, (2009)** who studied chronic constipation in the elderly reported that elderly women are two to three times more expected to report constipation than men.

There are many studies focused on the identification of the causes of constipation. They stated that constipation may be caused by several multifactorial causes (**Fleming & Wade, 2010; Andrews & Storr, 2011; Bharucha et al., 2013**). The current study reported that there were many causes for constipation such as ignore the urge of defecation, irregular bowel habits, obesity, inactivity, presence of chronic disease, colon problem, insomnia, stress, nervousness, drugs and indigestion. This result comes in accordance with **Jamshed et al., (2011), Khatri, (2011) and Booth, (2012)** who mentioned that risk factors for constipation include female, older age, inactivity, low caloric intake, low-fiber diet, low income, low educational level, and taking a large number of medications. Also, in a study in which experimental bed rest was imposed on healthy men for thirty five days, sixty percent of them developed constipation (**Iovino, 2013**). The previous studies indicated that inactivity, bad dietary habits and sedentary lifestyle are critical causes that have a negative effect on the health of the elderly people and can cause constipation.

As regards to drugs that can cause constipation, the current study illustrated that; more than one third of the elderly people who had constipation were taken analgesics and antihypertensive drugs. Also, more than twenty-five percent of them were taken antihistamines and antacids with a mean number of medications taken were 3.32 ± 1.4 per day. The results of the present study come in agreement with many researchers (**Gray, 2011; Gallegos-Orozco et al., 2012; Gandell et al., 2013**) who stated that medications that can cause constipation include analgesics, anticholinergic, anticonvulsant, antidepressant, antidepressant, antidiarrheal, antiemetic, antihistaminic, antihypertensive, and antispasmodic drugs. Added to that, numerous prescriptions and over the counter medications can contribute to constipation (**Gallegos-Orozco et al., 2012; Gandell et al., 2013**). So, doctors should limit and reduce the number of medications prescribed as possible to reduce the liability to their adverse side effects.

Symptoms of constipation include excessive straining, hard stools, feeling of an incomplete evacuation, use of digital evacuation such as support of the pelvic floor, and decrease in frequency (**Bruce, 2015**). The present study reported common constipation associated symptoms such as the passing of hard stool, pain during defecation, flatulence, laziness, straining, and feeling of incomplete evacuation. In the elderly there is usually more than one cause, requiring a multifactorial treatment method. The majority of clients 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 et al., 2015**).

The main line treatment of constipation includes dietary fibers, fluids, and exercises. The increased intake of fiber will reduce colonic transit time and improve the frequency and consistency of stools in fifty percent of the clients (**Borre et al., 2015**). Also, **Basson, (2015)** mentioned that the key to treat most clients with constipation is the modification of dietary deficiencies, which generally involves increasing intake of fiber and fluid, and decreasing the use of constipating agents as coffee, tea, and alcohol. Added to that, the clients should stay hydrated, drink eight to ten glasses of water every day, and avoid caffeinated drinks (**Rodriguez, 2009**). Regarding to foods that can reduce constipation **Rodriguez, (2009) and Ridder, (2015)** stated that beans, sweet potatoes, carrots, corn, whole wheat flour, whole-grain bread, cereals, leafy vegetables like spinach and cabbage, eat more fruits such as apples, figs, oranges are helpful to add fibers to diet, and reduce constipation. In addition, **Rodriguez, (2009)** mentioned that the person should make specific time for bowel movements. Set a specific time each day to try and go to the bathroom maybe after a meal or before go to bed. Even if the time or place isn't convenient, pay attention to the body's needs. The increased fibers intake among the studied sample during the present study could explain an important lifestyle modification that helps them to reduce constipation.

The present study focused on helping the elderly people to change their lifestyle and modifying it as possible to reduce constipation. The results of the present study reported that the main lifestyle modifications that help the studied subjects to reduce their constipation were increasing of more vegetables in diet, eating bran bread, drinking more than eight glasses of water daily, reducing caffeine intake, eating the meals at regular time, eating the breakfast meal, and maintaining physical activity with statistically significant difference between the pre and post changes in their lifestyle ($p < 0.001^*$). This comes in accordance with **Bruce, (2015) and Nall, (2015)** who stated the main explanations to relieve constipation including go to the bathroom at the same time each morning, don't ignore the urge, relax, increase fluids, and fibers intake. At the same line, these results were in agreement with some studies which mentioned that, lifestyle changes that can reduce constipation include go to the bathroom as soon as feel the urge to go, set a specific time to go to the bathroom specially after breakfast is a good time (**Bowles-Jordan, 2010**). Drink at least six to eight glasses of fluid daily (**Lindberg et al., 2011**), and exercises will help to reduce constipation (**Bowles-Jordan, 2010; Rao & Sifuentes, 2014; Borre, 2015**). Another study revealed highly statistically significant changes in the study sample in the pre-post intervention. The participants maintained a regular three meals daily, increase in those taking foods rich in fiber from thirteen

to seventy-four percent, and an increase in those on regular physical activity. There was also a statistically significant improvement in the fluid intake of >1.5 liters/day in the elderly from 39.1 to 87% in pre-post intervention (Markland, 2013; Nour-Eldein et al., 2014).

Regarding laxatives use, the current study revealed that there was a statistically significant decrease in the use of laxatives from about twenty-seven percent of the participants at the pre-intervention to about seventeen percent at post-intervention. This finding was in agreement with Nour-Eldein et al., (2014) who assessed the effect of lifestyle modification on the severity of constipation and quality of life of elders in nursing homes at Ismailia city, Egypt. They revealed that a statistically significant decrease in the participants who used laxatives from about eighty seven percent to about thirty-five percent users in the pre-post intervention. Additionally, Sturtzel & Elmadfa, (2008) evaluated the effect of intervention with dietary fiber to treat constipation and reduce laxative use in residents of nursing homes. They revealed a reduced laxative intake in response to regular fiber intake. The high fibers intake helped to improve the bowel elimination and enhanced in the reduction of laxative use.

The results of the present study revealed that there was a statistically significant reduction of constipation associated symptoms from pre to post test. As regards to frequency of defecation per week, the mean frequency of defecation increased from 1.8 ± 0.4 during the pretest to 2.6 ± 0.8 during the posttest. Another study showed a highly statistically significant improvement in post-intervention regarding the severity of symptoms of constipation (Nour-Eldein et al., 2014). The regular toilet routine is also suggested for elderly individuals who suffering from constipation. It was mentioned that within one hour of waking, the patient should engage in a mild physical activity and consume a hot drink and a fiber cereal. They should also have regular toileting in the morning, even without urge, and end the day with a fiber supplement (Gallegos-Orozco et al., 2012). The present study shows that about two-thirds of the sample changed their habits and maintain a regular toilet routine and about three-quarters of them avoid ignoring the urge during the posttest. Also, there was a statistically significant change in bowel habits and bowel elimination from the pretest to posttest ($p < 0.001^*$). Added to that, seventy percent of the sample ignored the urge of defecation and delayed it, but in the posttest, this percent reduced to twenty-six percent and most of them go to the bathroom directly when they feel the urge. So, scheduling a bowel elimination at the same time every day and avoid ignoring the urge to go to the bathroom are very important to prevent constipation (Ayaz, 2014; Chilson, 2015).

VI. Conclusion

Based on the results of the current study, the following were concluded: There were many causes for constipation such as ignoring the urge of defecation, irregular bowel habits, obesity, inactivity, chronic diseases, colon problem, insomnia, stress, nervousness, drugs, and indigestion. The main lifestyle modifications that help the elderly people to reduce constipation included more vegetables in diet, eating bran bread, drinking more than eight glasses of water daily, reducing caffeine intake, eating the meals at regular time, eating the breakfast meal, and maintaining physical activity with statistically significant difference between the pre and post changes in their lifestyle ($p < 0.001^*$). The participants who changed their lifestyle had normal bowel elimination per week (2.6 ± 0.8).

Recommendations

- 1- Encourage the elderly people to incorporate regular exercises in the form of walking in their daily activities.
- 2- Changes in lifestyle and increased the daily intake of vegetables, fruits, and water are very important factors that help to reduce constipation.
- 3- Educating the elderly people to maintain a regular schedule for bowel elimination at the same time every day and avoid ignoring the urge to go to the bathroom.

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