

# The Effect of the Implementation of Nursing Interventions Program on Incidence and Severity of Constipation among Geriatric Patients Undergoing Hip Surgeries

**Eman Gamal Abdelhamead Elkharadly, Assistant Lecturer**  
*Gerontological Nursing, Faculty of Nursing, Alexandria University*

**Moshera Mostafa El-Geneidy, Professor**  
*Gerontological Nursing, Faculty of Nursing, Alexandria University*

**Hanaa Abou El-soued Hussein Ahmed, Assistant professor**  
*Gerontological Nursing, Faculty of Nursing, Alexandria University*

## **Abstract**

**Background:** Constipation following hip surgeries is frequently disregarded by hospital staff, despite the fact that it is a severe problem affecting geriatric patients, causing discomfort and long-term impairments such as depression and anxiety, as well as poor quality of life. Nursing interventions are the most effective means of preventing or alleviating constipation. Based on a comprehensive examination of geriatric patients undergoing hip surgery, these interventions incorporate health education, exercise training, and abdominal massage with extra virgin olive oil. **Aim:** To determine the effect of the implementation of nursing interventions program on incidence and severity of constipation among geriatric patients undergoing hip surgeries. **Settings:** The study was conducted in the inpatient departments of El-Hadara Orthopedic and Traumatology University Hospital, Alexandria, Egypt. **Subjects:** A purposive sample of 50 geriatric patients admitted to the previously mentioned settings for undergoing hip surgeries. The sample was divided into two equally matched groups of 25 geriatric patients. **Tools:** Five tools were used: the "Saint Louis University Mental Status (SLUMS) Examination", the "Patient Health Questionnaire- 2 (PHQ-2)", the "Constipation Assessment Scale (CAS)", the "Socio-demographic and Clinical Data of Geriatric Patients Undergoing Hip Surgeries Structured Interview Schedule" and the "Daily Defecation Record Form". **Results:** A statistically significant difference was observed in incidence of constipation between the subjects in both groups ( $P= 0.034$ ). Although the severity of constipation between the subjects in both groups was not statistically significant ( $^{MC}P= 0.051$ ), it was mild for the subjects in the study group compared to those in the control group. The proposed nursing interventions are highly effective (effect size = 0.556) than routine hospital care in helping geriatric patients pass stool sooner after hip surgeries. **Conclusion:** The proposed nursing interventions program was beneficial in reducing the incidence and severity of constipation in geriatric patients undergoing hip surgeries. **Recommendations:** In-service training programs for all nurses working in orthopedic hospitals using the designed educational booklet to update their knowledge and skills about the use of complementary therapy (the proposed nursing interventions) to prevent or manage constipation.

**Keywords:** Geriatric patients, Hip surgeries, Constipation, Nursing interventions.

## **Introduction**

Hip operations are the most significant and successful therapy option for hip-related disorders in geriatric patients (Palm, 2022). It has a high chance of recovery, but it can also result in serious problems like delirium,

pneumonia, and constipation (Tarazona-Santabalbina et al., 2021).

Constipation is common in geriatric patients undergoing hip surgery where up to 65% of joint arthroplasty patients experienced some level of postoperative

constipation (Ross-Adjie et al., 2015). Studies in Australia, Denmark, and Korea reported that 57.9% to 69.1% of geriatric patients suffered from constipation after major orthopedic surgeries (Trads & Petersen, 2015; Park et al., 2016).

Several risk factors put geriatric patients undergoing hip surgeries at high risk of constipation such as, mandatory immobility, pain following the operation, taking certain medications, ignoring the urge to defecate, position during defecation, environmental and psychological factors, and fasting for the operation (Leonard, 2018).

Pharmaceutical and non-pharmacological treatments can be used to manage constipation (Trads et al., 2018; Samantha, 2022). Geriatric patients regularly utilize laxatives for pharmacological control; their administration must be individualized, with specific care given to the patient's health concerns (Pruthi, 2022). Nursing interventions are a type of non-pharmacological care for constipation that focuses on preventing constipation, and reducing the severity of its symptoms (Schuster et al., 2015).

Patient education about constipation, including intake of a fiber-rich diet, probiotic foods, increased fluid intake, habitual defecation practice training, maintaining a regular exercise program, and abdominal massage with extra virgin olive oil are all part of the nursing interventions program (Wickham, 2017; Faghihi et al., 2021).

This study will offer elderly people and their carers the knowledge and skills they need to deal with constipation and its complications. As a result, the proposed program reduces the risk of morbidity and mortality, recurrent hospitalization, and overall financial burden associated with constipation's negative impact.

In this respect, as members of the multidisciplinary team caring for geriatric patients having hip surgery, gerontological nurses have a crucial role in providing care to manage constipation (Riemen & Hutchison, 2016). This is accomplished by conducting assessments to identify risk factors, clinical

manifestations, and patients' awareness of constipation, plan and implement the proposed nursing interventions (Andrews & Aubyn, 2020). Finally, they must evaluate the effectiveness of nursing interventions on the incidence and severity of constipation to determine whether and to what extent the predetermined goals are achieved (Toney-Butler et al., 2021).

#### ***Aim of the Study***

This study aims to determine the effect of the implementation of nursing interventions program on incidence and severity of constipation among geriatric patients undergoing hip surgeries.

#### ***Research hypothesis***

Geriatric patients undergoing hip surgeries who receive the proposed nursing interventions program exhibit lower incidence and severity of constipation than those who do not.

#### ***Materials and Method***

##### ***Materials***

***Design:*** A quasi-experimental research design was used to conduct this study.

***Settings:*** This study was conducted at El-Hadara Orthopedic and Traumatology University Hospital, Alexandria, Egypt. The orthopedic departments have (10) wards (5 for males and 5 for females), with a total capacity of nearly 300 bed. The traumatology building has one ward for males and one ward for females, with a total capacity of nearly (100) bed.

***Subjects:*** A purposive sample of 50 geriatric patients aged 60 years and older, admitted to the previously mentioned settings for hip surgeries with intact cognitive function or mild cognitive impairment, have no depression, have no constipation, no colostomy, and not given laxatives during their hospitalization. The sample was divided into two equally matched groups (25 geriatric patients in each group). **Group "A,"** the control group, received only routine hospital care, and **group "B,"** the study group, received the proposed nursing interventions program alongside routine hospital care. The sample size was calculated using power analysis (Epi-info7)

program based on the following parameters: population size = 45/3months, expected frequency =50%, acceptance error =5%, confidence coefficient =95%, minimum sample size=41.

**Tools:** In order to collect the necessary data, five tools were used:

**Tool one: "Saint Louis University Mental Status (SLUMS) Examination"** This tool was developed by (Traiq et al., 2006) to identify older adults with cognitive impairment. The SLUMS is a 30-point, 11-item scale including attention, numeric calculation, immediate and delayed recall, animal naming, digit span, clock drawing, figure recognition, size differentiation, and immediate recall of facts from a paragraph. The scoring of items is determined by the respondents' degree of education; "High school education": Normal response is assigned a score between 27 and 30; mild neurocognitive dysfunction is assigned a score between 21 and 26; and dementia is assigned a score between 1 and 20. For respondents with less than a high school, the normal response ranges from 25 to 30; mild neurocognitive dysfunction ranges from 20 to 24; and dementia ranges from 1 to 19. Furthermore, for illiterate respondents, normal response is scored from 24 to 30; mild neurocognitive dysfunction is scored from 19 to 24; and dementia is scored from 1 to 18. This tool was translated into Arabic and found to be valid and reliable by (Abdelrahman & El Gaafary, 2014; Khirallah, 2022), with a reliability  $r = 0.723$ . In the current study, the Arabic version was used.

**Tool two: "Patient Health Questionnaire-2 (PHQ-2)"** This tool was developed by (Chunyu et al., 2007) to assess depressed mood over the previous two weeks. The PHQ-2 questionnaire contains two questions. It is graded on a four-point scale ranging from zero Not at all to three nearly every day and score ranges from zero to six. A score less than three denotes no depression, and score from three and more denotes major depression. Hafez et al., (2020) translated the PHQ-2 into Arabic and

found it to be valid and reliable, with a reliability  $r = 0.965$ . In this study, the Arabic version was used.

**Tool three: "Constipation Assessment Scale (CAS)"** This tool was developed by (McMillan & Williams, 1989) to assess the presence and severity of constipation. It consists of eight components: abdominal distension and bloating; change in the amount of gas passed rectally; less frequent bowel movements; oozing liquid stool; rectal fullness or pressure; rectal pain with bowel movement; small stool size; and the urge but inability to pass stool. Each item is rated on a three-point scale (0 = no difficulty, 1 = some trouble, and 2 = severe problem). To determine the presence of constipation, the score goes from 0 (no constipation) to 16 (worst constipation). To determine the severity of constipation, a score of 2 to 6 for mild constipation; a score of 7 to 10 moderate constipation; and a score of 11 and above for severe constipation. The CAS was translated into Arabic by Noshay, (2014) and proved to be valid and reliable, with reliability  $r = 0.88$ . The Arabic version of this scale was used in the present study.

**Tool four: "Structured Interview Schedule for Socio-demographic and Clinical Data of Geriatric Patients Undergoing Hip Surgeries"** This tool was developed by the researcher based on a review of relevant literature and it included two parts:

**Part I:** Socio-demographic data such as age, sex, and level of education.

**Part II:** Eating patterns and fluid intake, such as, the usual number of meals consumed per day, the regular time of meals, and the consumption of vegetables and fruits.

**Tool five: "The Daily Defecation Record Form"** This record was developed by the researcher based on a review of relevant literature to record the daily defecation of geriatric patients while hospitalized. It is used from admission until their discharge. This record had four items: frequency of defecation, stool consistency, straining or pressure when defecating, and the date of the first postoperative defecation.

**Method**

### **1- Administrative process**

- Approval from The Research Ethics Committee of the Faculty of Nursing, Alexandria University was obtained.
- The necessary approvals were obtained from the responsible authorities.
- Approval was obtained from the Faculty of Science, Department of Medical Plants about the safe use of extra virgin olive oil.
- The researcher surveyed the statistical records of the previously mentioned settings during 2019, in order to estimate the sample size.

### **2- The study was conducted through three main phases:**

#### **I- Preparation phase:**

##### **A- Preparation of the study tools:**

- The Arabic versions of tool I, tool II, and tool III were used for selection of subjects to be included in this study.
- Tool III was used for subjects in both groups more than once throughout the study. First time, on admission in order to select the subjects who do not have constipation according to the inclusion criteria. Then, daily until their discharge in order to examine the severity of constipation.
- Tool IV and tool V were developed by the researcher and tested for content validity by five experts in the study's related fields. Their recommendations were taken into consideration.

##### **B- A pilot study:**

- A pilot study was conducted on five geriatric patients undergoing hip surgeries; they were chosen from the previously mentioned settings and were not included in the study. It was done to examine the applicability, clarity, and feasibility of the study tools, as well as to estimate the time required for data collection. The necessary modifications were made.

##### **C- Developing the proposed nursing interventions program:**

- After a thorough review of the most recent related literature, the researcher designed the proposed program. It consists of orientation about the proposed program; its goal and its components,

which include health teaching, various exercises such as kegel's exercise, deep breathing exercise, abdominal muscle contraction exercise, and abdominal massage with extra virgin olive oil.

- To clarify the desired knowledge and skills for the study group, the researcher designed a brochure that covered the main points of the interventions with illustrative colored pictures.

#### **II- Implementation phase:**

##### **A- The control group:**

- Data collection started with the subjects in the control group to prevent contamination with participants in the study group.
- The researcher interviewed each subject daily and followed them up during their hospitalization to assess the incidence and severity of constipation using tools III and V.
- The researcher distributed the brochure to them prior to their discharge to verify that all subjects in both groups were handled fairly.

##### **B- The study group:**

- The researcher prepared the needed equipment such as special containers with olive oil and tissue paper, environment by reducing background noise and interruptions as much as possible, and maintaining patients' privacy while performing exercises and abdominal massage using a paravan, closing the ward's doors and windows
- The proposed program was implemented individually for each geriatric patient in the study group starting from admission until their discharge. Each participant was informed about the timeframe for each intervention. The proposed program is composed of a package of **four** nursing interventions as follows:

##### **1- Orientation:**

- On admission, each subject was informed about the proposed program emphasizing its significance and its components. Geriatric patients were taught about the risk factors, signs and

symptoms, and complications of constipation.

- Assuring the geriatric patients that the proposed nursing interventions are safe and would not negatively affect their health.
- This intervention began in the morning of the patients' admission. It took around an hour, depending on their level of understanding and cooperation.

## 2- Health teaching:

- In the afternoon of admission day, the researcher taught the patient about diet and fluid intake stressing on the necessity of eating a high-fiber diet, probiotic foods, and emphasizing the significance of boosting fluid intake from 2 to 2.5 liters per day, particularly warm liquids.
- Participants were also taught about the need to maintain a habitual defecation practice, especially in the morning when bowel movements are at their peak. This intervention took around 30-45 minutes.

## 3- Specific exercises:

- The researcher taught and demonstrated the performance of certain exercises, emphasizing their importance in preventing constipation these include:
  - ❖ **Kegel's exercise:** the patient was instructed to contract the pelvic floor muscles for **5** seconds while pretending to resist passing gas, then relax for **5** seconds. The patient was instructed to perform this exercise ten times, three times daily.
  - ❖ **Deep breathing exercise:** The patient is taught to sit or lie down and place one hand on his or her rib cage before taking a deep breath via the nose for **4** seconds, holding it for **7** seconds, and exhaling completely through the mouth for **8** seconds. Repeat this exercise cycle **10** times per day, twice a day. The researcher demonstrated the exercise and then asked participants to repeat it.
  - ❖ **Abdominal muscle contraction exercise:** The geriatric patient is asked to lie down on the bed with a pillow under his or her head and shoulders,

then take a deep breath slowly while gently contracting abdominal inside, try to hold the breathing for **3** seconds, and then exhale out. Repeat this exercise **5** times per day. The researcher demonstrated the exercise then asked the study participants to redemonstrate it to check the perfect practice.

## 4- Massage the geriatric patient's abdomen using extra-virgin olive oil:

- This intervention was carried out in the afternoon of the second day after admission and continued daily until the patient was discharged.
- The researcher washed her hands, and asked the geriatric patient to lie down on the bed with a pillow under his or her head and shoulders.
- The researcher applies 15 milliliters of this oil to the patient's abdomen, then massages it in a light circular motion, beginning from the bottom right side of the abdomen and moving up until reaching below the rib cage, then to the left side, and finally to the down direction until it reaches the lower abdomen from the left side. The massage was performed **5** times in a row in one session each day.
- At the end of the procedure, the researcher wipes the patient's abdomen with tissue paper.

## III- Evaluation phase:

- Throughout the perioperative period, the researcher assessed the effectiveness of the proposed program by assessing the defecation pattern using the tool V and the severity of constipation using the tool III among each geriatric patient in both the study and the control groups. To evaluate the effectiveness of the proposed program, the study group's findings were compared to those of the control group using the appropriate statistical analysis.  
*3- The collection of data covered a period of four months, from the mid of August 2022 to the mid of December 2022.*

## Ethical considerations:

An informed written consent was obtained from each literate participant and an informed oral consent from each illiterate participant after explaining the study aim. The privacy of the participants and the confidentiality of the collected data were maintained. The study subjects were informed that their participation in the study is voluntary and that they can withdraw at any time.

### **Statistical Analysis**

The collected data were organized, tabulated, and statistically analyzed using the statistical package for social studies (SPSS) Version 20.0. Qualitative data were described using numbers and percent. Quantitative data were described by the mean  $\pm$  standard deviation. Finally, analysis and interpretation of the data were conducted. P-values of 0.05 or less were considered statistically significant.

### **Results**

#### **Part 1: Socio-demographic characteristics of geriatric patients undergoing hip surgeries in the study and control groups**

**Table 1** illustrates the socio-demographic characteristics of participants in the study and control groups. Females were more prevalent among more than two-thirds of both the study and control groups (72.0%). The age of geriatric patients in both groups ranged from 60 to 90 years old, with a mean of  $73.40 \pm 8.56$  years in the study group and  $71.64 \pm 9.04$  years in the control group. More than half of the subjects in both groups (52.0% and 60.0%, respectively) were illiterate.

**Table 2** shows the distribution of geriatric patients undergoing hip surgeries among the study and control groups according to their level of mobility and type of toilet used before and during hospitalization. Before hospitalization, more than half of subjects in the study and control groups (52.0% and 56.0%, respectively) were independent. Those who were partially dependent were 48.0% and 24.0% of the study and control group participants, respectively. During hospitalization, the majority of subjects (96.0%) in both groups

became totally dependent either due to a hip problem or a postoperative advice for immobility. In relation to the type of toilet used for defecation, before hospitalization, the majority of participants (96.0%) in both groups used the usual toilet for defecation. During hospitalization, the majority of participants in the study and control groups (96.0% and 92.0%, respectively) were either wearing diapers or using the bed pan.

#### **Part II: Effect of the proposed nursing interventions on the incidence and severity of constipation in the study group versus routine hospital care in the control group**

**Table 3** compares the effect of the proposed program on the incidence and severity of constipation among geriatric patients undergoing hip surgeries in the study group versus the control group. After implementing the proposed program, a statistically significant difference in the incidence of constipation between the two groups was observed ( $P= 0.034$ ). However, the severity of constipation between the subjects in both groups was not statistically significant ( $^{MC}P= 0.051$ ), it was mild for the subjects in the study group compared to those in the control group.

**Table 4** compares eating patterns and fluid intake among participants in the study group who received the proposed program versus the control group who received routine hospital care. High statistically significant differences were observed between the study and the control groups in terms of eating the recommended number of meals ( $P<0.001$ ), eating their meals at a regular time daily ( $P=0.015$ ), and fluid consumption per day ( $FEP = 0.049$ ). On the other hand, there are no statistically significant differences between the study and the control groups regarding daily vegetable consumption ( $P=0.101$ ) and daily fresh fruit consumption ( $FEP = 0.247$ ).

**Table 5** compares the effect of the proposed program on the first day of postoperative defecation among the study group versus the control group. The proposed program is more successful (effect size = 0.556) than routine hospital care in

assisting geriatric patients to pass stool sooner during the postoperative period.

**Table 6** illustrates the effect size of the proposed program on the incidence and severity of constipation among participants in the study group versus the control group. The proposed program had a low effect on the incidence of constipation (effect size = 0.360) but a high effect on its severity (effect size = 1.51).

### **Discussion**

Acute constipation is the most prevalent form among orthopedic geriatric patients, and it is considered a more serious condition in those treated with opiates or hospitalized with immobilization such as in hip surgeries (Trads & Pedersen, 2015). Nursing interventions are believed to be the most effective for preventing or treating constipation for geriatric patients undergoing hip surgeries. These interventions incorporate health education, exercise training, and abdominal massage with extra virgin olive oil. It seeks to reduce the occurrence and severity of constipation, avoid complications, shorten hospital stays, improving early recovery which enhances their quality of life (Cumpian, 2021).

In this regard, the current study succeeded in lowering the incidence and severity of constipation; only two of the participants suffered from constipation compared to more than half of subjects in the control group (Table 3). In terms of constipation severity, patients in the study group reported mild constipation, whereas the control group subjects reported varying degrees of severity (Table 3). These encouraging findings could be attributed to the higher effect sizes of the proposed nursing interventions for constipation (Table 6). These findings are in accordance with those of a study conducted in Thailand by Monmai et al., (2011).

Despite the prevalence of the previously identified risk factors for constipation (Tables 1, 2, and 4), all participants in the study group, with the exception of two, did not develop constipation (Table 3). Among those who developed constipation, it can be

justified by specific findings such as some patients consume less than three meals per day, having irregular meals time, and their consumption of vegetables, fruits, and fluids being lower than the recommended. Furthermore, the majority of participants in the study group were completely reliant on others for mobility, either due to a hip problem or postoperative immobilization advice (Tables 2 and 4).

Among the important rationalizations for the positive effect of the proposed program, is the fact that the researcher offered the participants in the study group food, juices, and warm drinks packets such as anise to help them consume the recommended amount of food, as well as providing bed pans and diapers to dependent patients to facilitate defecation (Table 2 and 4). Furthermore, from patient admission to discharge, an effective and timely application of a package of four nursing interventions daily, which included teaching about constipation prevention and performing various exercises such as Kegel's exercise, deep breathing exercise, abdominal muscle contraction exercise, and abdominal massage with extra virgin olive oil. Additionally, health education was delivered to participants in the study group about the benefits of eating a high-fiber, probiotic-rich diet and increasing fluid intake from 2 to 2.5 liters per day, particularly warm liquids. Moreover, geriatric patients were taught about the need to maintain a habitual defecation practice, especially in the morning when bowel movements are at their peak (Table 7). The researcher gave each of the study subjects a colorful illustrated booklet to assist them remember the main educational ideas. These instructions raised geriatric patients' awareness and encouraged the subjects to follow the health regimen targeted at controlling constipation and making defecation easier. These interpretations were in agreement with Schuster et al., (2015) and Duyff, (2017).

The current study found that the majority of subjects in the study group consumed the recommended number of meals per day, and

nearly half of the subjects in the study group ate their meals at a regular time each day (Table 4). Three meals each day, typically at regular intervals, resulted in frequent bowel movements and the body naturally eliminated feces as more food was supplied. Fruits and vegetables include fiber, which helps normalize bowel movements by increasing the weight and size of the stool as well as softening it. These findings are supported by Koyle & Lorenzo (2021), and Iturrino & Lembo (2021). The introduction of certain exercises as part of the proposed interventions may be responsible for the significant reduction in the incidence and severity of constipation. Kegel's exercise, which strengthens and relaxes the muscles that support the rectum; deep breathing exercise, which improves digestive functioning and relieves any stress that may contribute to constipation; abdominal muscle contraction exercise; and massage of the abdomen using extra-virgin olive oil, which strengthen the abdominal muscles, stimulate peristalsis, decrease colonic transit time, and increase the frequency of bowel movements, were among the exercises included. All of these lead to the positive results revealed in the present study, and these findings are consistent with those Murphy (2019), and Azimuddin (2022).

Another notable finding in this study is that early postoperative defecation is an indicator of the effectiveness of the proposed nursing interventions in reducing the incidence and severity of constipation among study group. All study group subjects pass stool sooner during the postoperative period, either on the first or second day compared to those in the control group where more than two thirds of them passed stools either on the third day or did not defecate till their discharge (Table 5). This improvement could be attributed to several actions taken by the researcher such as, encouraging habitual defecation practice after the first meal of the day; this practice resulted in regular defecation. Furthermore, ensure privacy and provide the necessary bedpans or diapers to

the immobile patients. This result is in harmony with Nall, (2020).

In this respect, gerontological nurses are now the most vocal supporters of incorporating nursing interventions for constipation into geriatric patient care plans. The most current trends in constipation program entail working with patients and their families at the same time to modify the environment in which the program takes place (Greenstein & Gorczyca, 2018; Lundberg et al., 2020).

### **Conclusion**

Based on the results of this study, it can be concluded that the proposed nursing interventions program was beneficial in reducing the incidence and severity of constipation in geriatric patients undergoing hip surgeries. The current significant findings are supported by the fact that the majority of subjects in the study group did not have constipation after implementing the proposed program, and the rest experienced mild constipation.

### **Recommendations**

*In light of the study findings the following recommendations are suggested:*

- In-service training programs for all nurses working in orthopedic hospitals using the designed educational booklet to update their knowledge and skills on the use of complementary therapy to care for geriatric patients undergoing orthopedic surgeries to prevent or manage constipation.
- Geriatric patients undergoing orthopedic surgeries and their carers being involved in care. This will be accomplished by teaching them the importance of preventing constipation through a combination of such nursing interventions without the use of pharmaceutical agents.

### **Recommendations for further researches:**

- Generalization of the current study to a larger probability sample drawn from various orthopedic hospitals in Egypt.
- Study the effect of reflexology versus abdominal massage using olive oil on constipation in geriatric patients having lower limb orthopedic surgeries.



**Table 1: Distribution of geriatric patients undergoing hip surgeries among the study and control groups according to their Socio-demographic characteristics**

Socio-demographic characteristics	Study (n = 25)		Control (n = 25)	
	No.	%	No.	%
<b>Sex</b>				
Female	18	72.0	18	72.0
Male	7	28.0	7	28.0
<b>Age (years)</b>				
60 - (young old)	12	48.0	18	72.0
75 - (Middle old)	9	36.0	3	12.0
85 and above (old old)	4	16.0	4	16.0
Min. - Max.	60.0 -90.0		60.0 -90.0	
Mean ± SD.	73.40 ±8.56		71.64 ±9.04	

**Table 2: Distribution of geriatric patients undergoing hip surgeries among the study and control groups according to their level of mobility and type of toilet used for defecation before and during hospitalization**

Item	Study (n = 25)				Control (n = 25)			
	Before hospitalization		During hospitalization		Before hospitalization		During hospitalization	
	No.	%	No.	%	No.	%	No.	%
<b>Level of mobility</b>								
Independent	13	52.0	0	0.0	14	56.0	0	0.0
Partially dependent	12	48.0	1	4.0	6	24.0	1	4.0
Totally dependent	0	0.0	24	96.0	5	20.0	24	96.0
<b>Type of toilet</b>								
Toilet	24	96.0	1	4.0	24	96.0	2	8.0
Bedpan and wearing diapers	1	4.0	24	96.0	1	4.0	23	92.0

**Table 3: Comparison between the effect of the proposed nursing interventions program on the incidence and severity of constipation among geriatric patients undergoing hip surgeries in the study group versus the control group who received routine hospital care**

Incidence and severity of constipation	Study (n = 25)		Control (n = 25)		$\chi^2$	P
	No.	%	No.	%		
<b>Incidence of constipation</b>						
Constipation	2	8.0	8	32.0	4.500*	0.034*
No constipation	23	92.0	17	68.0		
<b>Severity of constipation</b>						
No Severity	23	92.0	17	68.0	6.812	MCp= 0.051
Mild	2	8.0	2	8.0		
Moderate	0	0.0	5	20.0		
Severe	0	0.0	1	4.0		

$\chi^2$ : Chi square test MC: Monte Carlo p: p value for comparing between the studied groups

\*: Statistically significant at  $p \leq 0.05$

**Table 4: Effect of the proposed nursing interventions program on eating pattern and fluid intake among geriatric patients undergoing hip surgeries in the study group versus routine hospital care in the control group**

Eating pattern and fluid intake	Study (n = 25)		Control (n = 25)		Test of sig.	P
	No.	%	No.	%		
<b>Number of meals /day</b>						
Three (3) and more meals/day	22	88.0	7	28	$\chi^2=18.473^*$	<0.001*
Less than three meals/day	3	12.0	18	72.0		
Min. – Max.	1.0 –4.0		1.0 –3.0		U=72.50*	<0.001*
Mean ± SD.	3.44 ±0.82		2.04 ±0.73			
Median	4.0		2.0			
<b>Regular time for meals</b>						
No	13	52.0	21	84.0	$\chi^2=5.882^*$	<b>0.015*</b>
Yes	12	48.0	4	16.0		
<b>Amount of vegetables consumed/day</b>						
Below recommended amount (<4 serving)	18	72.0	23	92.0	$\chi^2=3.388$	<sup>FE</sup> p=0.138
Recommended amount (4-6 serving)	7	28.0	2	8.0		
<b>Amount of fresh fruit consumed/day</b>						
Below recommended amount (<3 fruits)	19	76.0	23	92.0	$\chi^2=2.381$	<sup>FE</sup> p=0.247
Recommended amount (3-4 fruits)	6	24.0	2	8.0		
<b>Amount of fluid by cc</b>						
Less than recommended (2000 cc/day)	18	72.0	24	96.0	$\chi^2=5.357^*$	<sup>FE</sup> p= <b>0.049*</b>
Recommended (2000- 2500cc)	7	28.0	1	4.0		
Min. – Max.	400.0 –2200.0		200.0 –2200.0		U=90.0*	<0.001*
Mean ± SD.	1652.0 ±429.26		992.0 ±418.25			

SD: Standard deviation U: Mann Whitney test p: p value for comparing between the two studied groups  
 $\chi^2$ : Chi square test MC: Monte Carlo FE: Fisher Exact  
 \*: Statistically significant at  $p \leq 0.05$

**Table 5: Effect of the proposed nursing interventions program on day of postoperative defecation among geriatric patients after hip surgeries in the study group versus the control group who received routine hospital care**

Day of postoperative defecation	Study (n = 25)		Control (n = 25)		$\chi^2$	<sup>MC</sup> p	Effect size	Level
	No.	%	No.	%				
1 <sup>st</sup> day	11	44.0	3	12.0	15.050*	0.001*	<b>0.556</b>	<b>High Effect</b>
2 <sup>nd</sup> day	11	44.0	6	24.0				
3 <sup>rd</sup> day	3	12.0	12	48.0				
Not defecate	0	0.0	4	16.0				

$\chi^2$ : Chi square test MC: Monte Carlo p: p value for comparing between the two studied groups \*: Statistically significant at  $p \leq 0.05$

**Table 6: Effect size of the proposed nursing interventions on the incidence and severity of constipation among the study group versus the control group who received routine hospital care**

Item	Study (n = 25)	Control (n = 25)	Effect size	Level
	Mean ± SD.	Mean ± SD.		
Incidence of constipation	4.76 ± 1.45	3.92 ± 3.01	0.36	Low Effect
The Severity of constipation	5.0 ± 1.41	7.88 ± 2.30	1.51	High Effect

No effect <0.2 / Low Effect 0.20–<0.5 / Intermediate Effect 0.5–<0.8 / High Effect More than 0.8

## Reference

- Abdelrahman, HMM., & El Gaafary, MM. (2014). Validation of Arabic Version of Saint-Louis-University-Mental-Status (SLUMS) - Examination and Prevalence of Cognitive Impairment in Community Dwelling Egyptian Older Adults. *Middle East Journal of Age and Ageing*, 11(4), 11-19. <http://dx.doi.org/10.5742/MEAA.2014.92575>.
- Andrews, A., & Aubyn, B. (2020). Assessment, diagnosis and management of constipation. *Nursing Standard Journal*, 35(9):59-65. <https://doi.org/10.7748/ns.2020.e11512>.
- Azimuddin, Kh. (2022). How to treat constipation with Kegel exercises? <https://colonsurgeonhouston.com/blog/how-to-treat-constipation-with-kegel-exercises>.
- Chunyu, L., Friedman, B., Conwel, Y., & Fiscella K. (2007). Validity of the Patient Health Questionnaire 2 (PHQ-2) in identifying major depression in older people. *American geriatric society Journal*, 55 (4), 596-602. <https://doi.org/10.1111/j.1532-5415.2007.01103.x>
- Cumpian, T. (2021). Constipation Nursing Diagnosis & Care Plan. Available at: <https://www.nursetogether.com/constipation-nursing-diagnosis-care-plan/>.
- Duyff, RL. (2017). Carbs: Sugars, starches, and fiber. In: *Academy of Nutrition and Dietetics Complete Food and Nutrition Guide*. 5<sup>th</sup> ed. New York, N.Y.: Houghton Mifflin Harcourt.
- Faghihi, A., Najafi, SS., Hashempur, MH., & Najafi Kalyani, M. (2021). The Effect of Abdominal Massage with Extra-Virgin Olive Oil on Constipation among Elderly Individuals: A Randomized Controlled Clinical Trial. *International Journal of Community Based Nursing Midwifery*, 9(4):268-277. <https://doi.org/10.30476/ijcbnm.2021.88206.1495>.
- Greenstein, AS., & Gorczyca, JT. (2019). Orthopedic Surgery and the Geriatric Patient. *Clinical Geriatric Medical Journal*, 35(1):65-92. <https://doi.org/10.1016/j.cger.2018.08.007>.
- Hafez, S., Abdelnasser, N., & Shoukr, E. (2020). Factors Associated With Personal Protective Measures Utilization among Community Dwelling Older Adults during COVID-19 Pandemic in Alexandria, Egypt. *NILS Journal for Geriatric and Gerontology*, 23(COVID-19), 74-90. <https://dx.doi.org/10.21608/niles.2020.164360>.
- Iturrino, JC., & Lembo, AJ. (2021). Constipation. *Sleisenger and Fordtran's Gastrointestinal and Liver Disease*. 11th ed. Philadelphia, PA: Elsevier: chap 19.
- Khirallah, N., Abdelfattah, N., & El-sayed, E. (2022). Effect of Nursing Interventions Program on Incidence of Postoperative Delirium among Hospitalized Geriatric Patients Undergoing Hip Fracture Surgery. *Alexandria Scientific Nursing Journal*, 23 (2). <https://doi.org/10.21608/asalexu.2021.219094>.
- Koyle, MA., & Lorenzo, AJ. (2021). Management of defecation disorders. *Campbell-Walsh Urology*. 12th ed. Philadelphia, PA: Elsevier: chap 36.
- Leonard, J. (2018). What to know about constipation after surgery. Available at: <https://www.medicalnewstoday.com/articles/323264>.
- Lundberg, V., Bostrom, AM., Gottberg, K., & Konradsen, H. (2020). Healthcare Professionals' Experiences of Assessing, Treating and Preventing Constipation among Older Patients During Hospitalization: An Interview Study. *Multidisciplinary Healthcare Journal*, 16; 13:1573-82. <https://doi.org/10.2147%2FJMDH.S277727>.
- McMillan, S., & Williams, F. (1989). Validity and reliability of the Constipation Assessment Scale. *Cancer Nursing Journal*, 12: 183-8. <https://doi.org/10.1097/00002820-198906000-00012>.
- Monmai, P., Aree-Ue, S., Putwatana, P., Kawinwonggowit, V. (2011). Effects of a Constipation Prevention Program on Incidence and Severity of Constipation in Hospitalized Elderly undergoing Hip Surgery. *Journal of Nursing Science*, 29(4):10-7.
- Murphy, Sh. (2019). Constipated? Get Moving with These 4 Exercises. Available at: <https://www.healthline.com/health/constipation/exercises>.

- Nall, R. (2020). Bowel Retraining. Available at: <https://www.healthline.com/health/bowel-retraining#:~:text=Most%20doctors%20recommend%20going%20in,resume%20your%20regular%20daily%20activities.>
- Noshay, H. (2014). Effect of Lifestyle Modification Interventions To Overcome Chronic Constipation Among Community Dwelling Older Adults. Doctorate Thesis. Faculty of Nursing, Mansoura University, Egypt.
- Palm, H. (2022). Hip Fracture: The Choice of Surgery. Available at [https://www.researchgate.net/publication/343795467\\_Hip\\_Fracture\\_The\\_Choice\\_of\\_Surgery](https://www.researchgate.net/publication/343795467_Hip_Fracture_The_Choice_of_Surgery).
- Park, H., Yun, O., Kim, H., Yu, G., & Ham, J. (2016). Constipation in patients following orthopedic surgery: Incidence and influencing factors. *Adult Nursing Korean Journal*, 28(6), 637–45. <http://doi.org/10.7475/kjan.2016.28.6.637>
- Pruthi, S. (2022). Over-the-counter laxatives for constipation: Use with caution. Available at: <https://www.mayoclinic.org/diseases-conditions/constipation/in-depth/laxatives/art-20045906>.
- Riemen, AH., & Hutchison, JD. (2016). The multidisciplinary management of hip fractures in older patients. *Orthopedic Trauma Journal*, 30(2):117-22. <https://doi.org/10.1016/j.mporth.2016.03.006>.
- Ross-Adjie, G., Monterosso, L., & Bulsara, M. (2015). Bowel management post major joint arthro-plasty: Results from a randomized controlled trial. *Orthopedic and Trauma Nursing International Journal*, 19(2): 92– 101. <https://doi.org/10.1016/j.ijotn.2014.04.002>.
- Schuster, BG., Kosar, L., & Kamrul, R. (2015). Constipation in older adults: stepwise approach to keep things moving. *Canadian Family Physician Journal*, 61(2):152-8.
- Tarazona-Santabalbina, FJ., Ojeda-Thies, C., Figueroa, Rodriguez, J., Cassinello-Ogea, C., & Caeiro, JR. (2021). Orthogeriatric Management: Improvements in Outcomes during Hospital Admission Due to Hip Fracture. *International Journal of Environmental Research and Public Health*, 18(6):3049. <https://doi.org/10.3390/ijerph18063049>.
- Tariq, S., Tumosa., N. Chibnall, J., Perry, M., & Morley, J. (2006). The Saint Louis University Mental Status (SLUMS) examination for detecting mild cognitive impairment and dementia is more sensitive than the mini mental state exam (MMSE) A pilot study. *American Journal Geriatrician Psychiatry*, 14, 900-10. <https://doi.org/10.1097/01.jgp.0000221510.33817.86>.
- Toney-Butler, TJ., & Thayer, JM. (2022). Nursing Process. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK499937/>.
- Trads, M., & Pedersen, PU. (2015). Constipation and defecation pattern the first 30 days after hip fracture. *International Nursing Practice Journal*, 21(5):598-604. <https://doi.org/10.1111/ijn.12312>.
- Trads, M., Deutch, S. R., & Pedersen, P. U. (2018). Supporting patients in reducing postoperative constipation: fundamental nursing care—a quasi-experimental study. *Scandinavian Journal of caring sciences*, 32(2), 824-32. <https://doi.org/10.1111/scs.12513>.
- Turan, N., & Ast, T. (2016). The Effect of Abdominal Massage on Constipation and Quality of Life. *Gastroenterology Nursing Journal*, 39(1):48-59. <https://doi.org/10.1097/sga.0000000000000202>.
- Wickham, R. (2017). Managing Constipation in Adults with Cancer. *Journal of Advanced Practitioner in Oncology*, 8(2):149–61. <https://pubmed.ncbi.nlm.nih.gov/29900023>