Effect of Implementing Nursing Program on Minimizing Constipation among Immobilized Patients at Mansoura University Hospitals

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Abstract: Background: Constipation is one of the most common gastrointestinal disorders that affects the quality of life of patients and well-being of patients as well as their activity of daily living. **The aim** of the study was to evaluate the effect of nursing intervention program on minimizing constipation among immobilized patients at Mansoura University Hospital. **Design:** The study was carried out using a quasi- experimental design. **Setting:** It was conducted in Neurological and Orthopedic Departments at Mansoura University Hospitals. **Sample:** A purposive sample of 162immobilized patients were randomly divided into two equal groups (study group 81 and control group 81), those patients were selected according inclusion and exclusion criteria. **Tool for data collection:** A structured interview questionnaire covering patients' demographic characteristics, medical history, dietary habits, elimination habits, their knowledge about constipation. Nurses' tool which assess nurses' knowledge and practice. **Results**: There was statistically significant difference between the control and study groups post-program regarding patients' knowledge and comprehensive bowel assessment and on the other hand, there was significant improvements in nurses' knowledge and performance level toward patients with constipation post-program. **Conclusion:** Nursing intervention program lead to an improvement in nurses' knowledge and practices regarding constipation problem and minimizing constipation among immobilized patients. **Recommendation:** Immobilized patients should be assessed periodically in term of risk for constipation occurrence using constipation assessment scale. Also continuous nursing performance appraisal from hospital administration personal toward providing standard nursing care to immobilized patients.

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Key words: Nursing program; Constipation; Immobilized patients; Mansoura; Egypt.

1. Introduction

Constipation is one of the most common gastrointestinal problems and is a significant personal and public health problem **(Spinzi *et al.* 2009, Ueki *et al*. 2011).** It is described as difficult or irregular bowel movements, straining during defecation passing hard stools and difficult stool evacuation. However, the term of constipation is difficult to define because it is a subjective experience and has different meaning among population **(Lee, 2011).** Despite the high prevalence, constipation is often both mis-diagnosed and under-treated. So that, it has an impact on the quality of life of patients and this also affect patient well-being and activity of daily living. **(Sanchez & Bercik, 2011).**

Constipation is one of clinical problems that combine with incomplete evacuation, passing stool with difficulty or both. Furthermore, constipated patient has symptoms as abdominal pain and distention and hard stool. However, constipation may be present with normal elimination pattern, defined as defecate three times every week, or has bowel movements per day. Chronic constipation is characterized by the presence of symptoms for 3 months minimally that may last at 12 months **(Mounsey *et al.*, 2015).**

In USA, constipation represents as prevalent gastrointestinal problem that has an effect on about 10% of general population, 20% of patients in nursing home and rehabilitation center, 70 % of immobilized patients or who have learning disabilities **(Sinclair, 2010).** It is diagnosed frequently in female than male (M/F ratio: 1: 2–3) **(De Giorgio *et al*., 2015).**

Immobility is defined as disability to move freely and any change in the patients' mobility level as a result of these restricted movements due to bedridden or physical restriction of movement because of external device, voluntary restriction of movement or alteration in function of motor skeletal system. It also has an effect on social, physiological, psychological status. Additionally, different literature revealed that about 50% of hospitalized individuals have mobility restriction and these patients were mostly existed in critical care units, trauma and emergency wards,

orthopedic ward, neurologic ward and geriatric wards of a hospital **(Poudyal *et al.*, 2014).**

Nurses have a unique role in helping patients to manage bowel function. The nurse is often the first person to be aware of the problem and in many cases, the sensitive handling of the situation by the nurse can lead to a rapid improvement for patients. Successful management depends upon good assessment of the patient; good assessment depends upon a good understanding of bowel function and the identification of contributing factors. Prevention is obviously better than cure and nurses can play a major role through health education **(Abd El Gafar & Abd Elgaphar, 2017).** To start the prevention of constipation, the patients must follow well-balanced diet that high in fibers, increase intake of fluids, perform exercises regularly and establish normal toileting pattern rapidly after identifying that patient has constipation risk **(Sherry *et al.*, 2012).**

The bowel programs should be provided through a regular time to encourage normal elimination. Establishing a regular emptying of bowel for health and cleansing is considered the primary goal of bowel program. Applying this program will help patient to avoid constipation and bowel impaction involuntarily. **(Englewood & Colorado, 2013).** The bowel program of choice should be individualized for each patient, requiring the least amount of intervention (i.e. High fiber diet and dietary supplements, medications, mini-enemas, digital stimulation, etc.) to achieve acceptable results as identified by the patient and the rehabilitation team **(O'Brien, 2015).**

Significance of the study

Constipation is one of the gastrointestinal disorders that is considered more frequent, it may affect people at any time of life and at any age. Also, it has a significant impact on quality of life as it can be chronic or sever. Many patients suffer in silence and try to self-medicate, while for those who do seek medical help, treatments can be unsatisfactory. Previous studies revealed that the prevalence rate of constipation among patients within the orthopedic setting was up to 64% of patients. Additionally, its prevalence is higher among neurological patients such as (after Stroke is 30% to 60%) **(Kasaraneni & Hayes, 2014)**. In Mansoura University Hospital (MUH) 2014, the prevalence of constipation among immobilized patients in neurological departments was 513 in female and 377 in males; with total prevalence were 890 patients from about 1860 admitted through this year **(Annual statistical data from neurological department at Mansoura university hospital, 2014)**. Studies on preventing constipation are rarely done at Mansoura University Hospital, in spite of increased numbers of patients suffering from constipation in both setting. Therefore, the current study was conducted to evaluate the impact of nursing intervention program on preventing constipation among immobilized patients at Mansoura University Hospital.

Aim of the Study:-

The aim of the study is to evaluate the effect of nursing intervention program on minimizing constipation among immobilized patients at Mansoura University Hospital, through:-

- Prevention program to patients who don't have constipation.
- Management program for patients who developed constipation whether acute or chronic, to prevent further complications.

Research hypothesis:-

Constipation will be minimized among immobilized patients who will receive routine care and nursing intervention program in comparison to immobilized patients who will receive routine nursing care only.

Study design:

Quasi-experimental research design was utilized to conduct this study.

Setting:

This study was conducted at Neurological and Orthopedic departments at Mansoura university Hospitals.

2. Materials & Method

Subjects:

The sample of present study includes patients and nurses:-

1-Patients:

A purposive sample of 162 patients who were admitted to the above mentioned setting, they were randomly assigned into two equal groups, First group (control group) including 81patients who received routine hospital care only, The Second group (intervention group) including 81 patients who received routine hospital care and nursing intervention program.

2-Nurses:

All available nurses (20) that were working at the Orthopedic and Neurologic Departments, who provide direct patient care with different educational level, different ages and accepted to participate in this study.

Criteria for selection of sample:

Inclusion criteria:

- Immobilized patients.
- Both genders.
- Age between (20-60) years.
- Expected to stay more than one week at hospital.
- Willing to participate and gave consent.
- Conscious patient and able to communicate.

Exclusion criteria:

- Very ill patients or terminally ill patients.
- Being underweight or overweight. (Based on patient hospital report).
- Severe dehydration. (Based on patient hospital report).
- Gastrointestinal conditions like colon or rectal cancer. **Tools and Techniques of data collection:**

The following tools were used for collection of necessary data and achieving the aim of the study as following:

1-Tools for patients:

Tool (I): Socio-demographic characteristics and patients' health status: This tool was constructed by the investigator to collect the necessary health data. It was consisted of three parts:

Part 1: Socio-demographic characteristics of patients (as age, gender, level of education, date of admission, departments of collecting the study sample).

Part II: Current health status of patients, which include present medical and surgical condition for patients.

Part III: Past health and medical history, which include past medical and surgical history of patients.

Tool (II): Patients' knowledge about prevention and management of constipation: This tool was developed by the investigator after reviewing relevant literatures to assess patients' knowledge about prevention and management of constipation. This tool was divided into two parts:

A- General patients' knowledge about constipation (definition of constipation, its symptoms, causes and medications causing it, complications) and it include four questions.

B- Patients' knowledge about prevention and management of constipation, it includes four questions.

Tool (III): Comprehensive bowel care assessment sheet: This tool was developed by Abdelkader (2008) to assess patients' bowel status, it consisted of three parts:-

Part I: Bowel assessment: It was concerned with the following data: -

Elimination pattern, onset of constipation before hospitalization, associated symptoms, time of bowel habits, gastrointestinal motility, abdominal distention, stool color and odor, preventive measures and factors affecting bowel function.

Part II: Constipation Risk Assessment Scale: This tool was developed by **Richmond (2006)** to assess the risk of constipation. According to the total score of the scale, the constipation risk can be defined as “low”, “normal” or “high”. When the total is high, it shows that there is a high risk of constipation **(Turan & Kaya, 2014).**

Part III: Bristol Stool Form Scale: This tool was developed by a group of gastroenterologists at Bristol University in England (1997), Bristol Stool Form Scale is used to evaluate the shape of stool and follow the changes in bowel habits **(Collins & O’Brien, 2015).**

2- Tools for nurses:- Two tools were used for data collection that were used two times in the form of pre/post tests**.**

- Tool I: Nurses' knowledge about prevention and management of constipation, in addition to nurses' socio-demographic characteristics.
- Tool II: Nurses' performance checklist about prevention and management of constipation.

Method

1. Ethical approval was obtained from research Ethics Committee at the Faculty of Nursing - Mansoura University.
2. Tool (I): Socio-demographic characteristics and patients' health status was developed by the investigator after reviewing the related literature and was tested by jury for their validity and reliability.
3. Validity:-The study tool was reviewed by seven experts from different departments. Five from (Medical -Surgical Nursing Department), one from (Critical Nursing Department) at Mansoura Faculty of Nursing and one from (community and public health department) at Mansoura faculty of medicine. These experts assessed the research tool to ensure the applicability, clarity, completeness, comprehensiveness, meaningful, relevant and replication.
4. A Pilot study was occurred to ensure the clarity, time frame needed, applicability and replication of the questionnaire. It will apply on 10% of sample. The patients of this pilot study will not be included in the study sample.

Ethical considerations

1- Ethical approval was obtained from research Ethics Committee at the Faculty of Nursing - Mansoura University.

2- An agreement of patients was obtained verbally and written before inclusion and after explaining the aim and nature of the study to them.

3- The patient had the right to refuse participation in the study at any time.

4- Ensure the confidentiality of the patients’ information and used it only for the research purpose.

5-The patients assured that the result will be used as a component of the research only.

Work filed: The study was conducted on four phases: Preparation phase, assessment phase, Interventional phase and Evaluation phase as following:

Assessment phase: In this phase:-

- The investigator performed an initial assessment for baseline data and health relevant data for both groups using tool I (Part1 and Part2).
- Patients' bowel condition was assessed using tool (II) for both groups before and after implementing nursing program.

Intervention alphase: In this phase:-

- Participant trained nurses implement the nursing program with the assistance of the investigator after comprehensive explanation and application to each item in program in educational and practical sessions.
- This nursing program include prevention to immobilized not constipated patients and management of immobilized constipated patients:

Prevention of constipation include the following:-

- Continuous physical assessment and examination for early detection to any causes or risk factor of constipation.
- Eat healthy diet that contain fibrous foods.
- Intake balanced amount of water.
- Perform physical exercises regularly and activity of daily living.

Management of constipation include the following:-

- Establish a regular toileting schedule consistent with the patients' pervious bowel habits.
- Abdominal massage: patient lie down on back and with palm on abdomen. Use flat fingers to make a small clockwise motion around belly button. Start by applying light pressure and increase it regularly, drawing four circles to improve intestinal movement.
- Provision of adequate fluids and fibers intake.
- Provide regular exercise especially (Range of motion exercises, pelvic muscle exercise (kegel exercise), and lower limb exercises).

Evaluation phase): post-program): In this phase:

- The investigator performed post-test for patients group who receive the program for the evaluation the impact of applying this nursing intervention program on managing or preventing constipation using part II (Bristol assessment scale) and part III (constipation assessment scale) and also assess patients' knowledge level after implementing the program.

Statistical Design:

Data were collected, coded, computed and statistically analyzed using SPSS (statistical package of social sciences) version 16. Qualitative variables were represented as frequency and percentage while quantitative continues variables were represented as mean ± SD. For comparison of qualitative variables Chi square test was used ($\chi 2$) which was replaced by Fisher Exact test and Mont Carlo Exact test if value of expect cell was less than 5. For comparison of quantitative continues variables student t test and paired t test was used. The difference was considered significant if $P \leq 0.05$.

Result

Table 1. Frequency of the study and control groups according their demographic characteristics.

Socio-demographic Variables	Control N 81	%	Study N 81	%	Chi square test X^2	P
Age						
20-30	11	13.6	14	17.3		
31-40	13	16.0	17	21.0		
41-50	37	45.7	32	39.5		
51-60	20	24.7	18	22.2	1.361	0.715
Mean ±SD	42.95±10.25		40.90±9.10		1.346	0.180
Gender						
Male	45	55.6	47	58.0		
Female	36	44.4	34	42.0	0.101	0.751
Department						
Neuro	45	55.6	53	65.4		
Ortho	36	44.4	28	34.6	1.653	0.199
Education	21	27	22	27		
Illiterate	16	21	14	17.5		
Primary	29	35	30	37		
Secondary High	15	20	15	18.5	6.741	0.183

This table shows that the mean age was (42.95±10.25 vs. 40.90±9.10) in the study and control groups respectively. The majority of patients' age were (39.5), (45.7%) in the study and control groups respectively ranged between 41 to 50 years. Regarding gender, more than half (58%), (55.6%) of the study and control groups respectively were males. Regarding to department of sample collection, the table shows that (65.4%) and (55.6%) of the study and control groups samples were collected from neurologic department. Regarding level of education, the table reveals that more than one quarter (27%) of the control and study group were illiterate.

Table 2. Frequency distribution of the study and control group regarding comprehensive bowel assessment (bowel habits).

Bowel Habits Variables	Control N 81	%	Study N 81	%	Chi square test X^2	P
1-Elimination pattern prior to hospitalization						
Every day	12	14.8	8	9.9		
Every 3 day	41	50.6	41	50.6		
Every week	27	33.3	31	38.3		
Other	1	1.2	1	1.2	1.076	0.783
2-Onset of constipation prior to hospitalization						
Weeks	27	33.3	19	23.5		
Month	21	25.9	23	28.4		
More than month	19	23.5	27	33.3		
Life long	3	3.7	3	3.7		
No	8	9.9	9	11.1		
Others	3	3.7	0	0.00	5.932	0.313
3-Associated symptoms						
Straining	38	46.9	48	59.3		
Abdominal pain	22	27.2	21	25.9		
No	21	25.9	12	14.8	3.641	0.162
4-Preventive measures						
Hot fluids	27	33.3	51	33.3		
Fibers	54	66.7	50	61.7	0.430	0.512

This table Showed that, regarding elimination pattern prior hospitalization, about half (50.6%), (50.6%) of the study and control group respectively had elimination pattern every three days and about (31%), (33.3%) of the study and control groups respectively had elimination pattern every week. Concerning the onset of constipation prior to hospitalization, it was noted that more than quarter (33.3%) of the study group had onset of constipation more than month before hospitalization while (33.3%) of control group had onset of constipation weeks before hospitalization.

This figure clarifies that slightly less than three quarters (74.1%) of the study group hadn't constipation post-program compared to (7.4%) pre-program with highly statistically significant difference at (P= 0.0001).

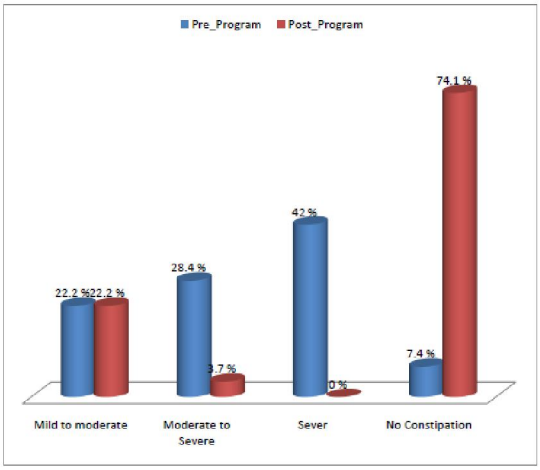

Figure (1): Degree of constipation within the study group (pre and post-program).

Table3: Comparison between the study and control groups regarding comprehensive bowel assessment (pre and post-program).

Bowel habits	Items	Post-program				Chi square test X2P
		Control		Intervention		
		No	%	No	%	
1-Elimination pattern	Every day	10	12.3	57	70.4	$\chi^2 = 50.701$ P 0.000**
	Every 3 days	38	46.9	10	12.3	
	Every week	26	32	10	12.3	
	Other	7	8.6	4	4.9	
7- Abdominal distension	None	20	24.6	54	66.7	$\chi^2 = 30.281$ P 0.000**
	Slight	30	37.1	18	22.2	
	Moderate	28	34.6	9	11.1	
	Severe	3	3.7	0	00.0	
8-fiber intake.	Yes	44	45.3	59	72.8	$\chi^2 = 6.010$ P 0.014*
	No	37	45.7	22	27.2	
9-fluid intake.	Balanced	38	46.9	59	72.8	$\chi^2 = 10.213$ P 0.002*
	Unbalanced	42	51.8	22	27.2	

This table illustrates that **according elimination pattern,** slightly less than three quarters (70.4%) of the study group compared to minority (12.3%) of the control group had elimination pattern every day post-program with highly statistically significant difference**. Regarding abdominal distension,** the table illustrates that more than two third (66.7%) of the study group and less than one quarter (24.6%) of the control group hadn't abdominal distension post-program with highly statistically significant difference. **Concerning fibers intake,** the table shows that less than half of control group (45.3%) compared to slightly less than three quarters (72.85) of study group had adequate fibers intake post program**. Concerning fluid intake,** the table represents that less than half of control group (46.9%) compared to slightly less than three quarters (72.8%) of study group had balanced fluid intake post program**.**

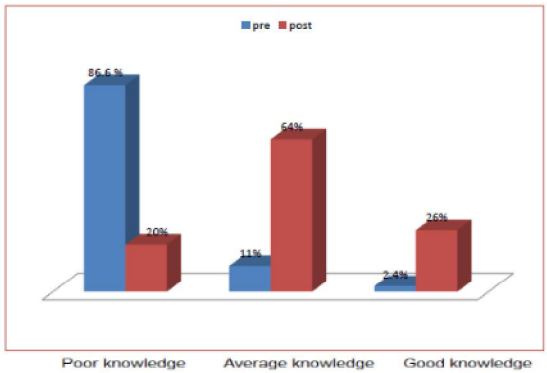

Figure 2: Total score of knowledge about constipation within the study group (pre and post-program).

This figure represents that (64%) of the studied patients registered average knowledge after implementing program compared to (86.6%) of them with poor knowledge before implementing program with highly statistically significant difference where (P=0.0001).

4. Discussion

Socio-demographic characteristics; regarding age, The results of the present study illustrated that the mean age for the studied patients were (42.95±10.25 vs. 40.90±9.10) in the study and control group respectively. This result was in line with **Diane *et al.*, (2013)** who mentioned that, the medium age of the studied population was 37.5±14.4 years in the intervention group and 40.8±12.8 years in the control group. **Concerning gender;** the results of the present study revealed that more than half of the studied groups were male. This result was agreement with **Abd El-Salam, (2009)** who found that more than two third of the sample were males.

According comprehensive bowel assessment; the finding of present study illustrate that about half of both groups had elimination pattern every three days. This was in accordance with **Shokry, (2013)** who mentioned that the majority of both groups had elimination pattern every three days. Also, this result was in the same line with **Kacmaz and Kasikci, (2007)** who reported that more than half of both groups had frequency of defecation every three days. **Regarding onset of constipation;** the present study indicate that, majority of the study and control groups have onset of constipation more than month before hospitalization and this was in the same line with **Abd Elkader, (2008)** who reported that (40%) of study group and (28%) of control group had onset of constipation more than month before hospitalization.

Regarding degree of constipation pre and post program, the current study demonstrated that, there

was slightly less than three quarters of the study group hadn't constipation post-program compared with minority of them pre-program. This result was supported by **Abboud, (2014)** who mentioned that, there was statistically difference between pre and post group regarding constipation score. Also **Diane et al., (2013)** reported that the incidence of constipation was decreased post intervention among study group compared to pre intervention group. Also **Doreen, (2013)** added that, the study group improved significantly more than the control groups.

Comparison between the control and study groups according comprehensive bowel assessment. According elimination pattern; the current study illustrated that majority of the study group had elimination pattern every day compared with minority of control group post program. This was supported by **Abd Elgafar and Abd Elgaphar, (2017)** who stated that, the majority of study group (90%) compared with minority of control group (8%) had elimination pattern every 1-2 days post program with highly statistically significant difference. **Regarding abdominal distension;** the result also illustrated that slightly more than two third of the study group hadn't abdominal distention compared with more than one quarter of control group post-program compared to pre-program. The result supported with **Noiesen *et al,* (2014)** who stated that there was statistically significant between the control and study groups post program regarding abdominal distention.

Concerning fluid intake, the result reported that less than half of control group compared to slightly less than three quarters of study group had adequate fluid intake post program with highly statistically significant difference between both group. The result came in the same line with **Nour-Eldein, *et al*., (2014)** who emphasized that there was a statistically significant increase of the daily fluid intake of more than 1.5 liters where (39.1%), (87%) of control and study groups respectively had balanced fluid intake post intervention. Also, this result was to some extent in agreement with **Pare *et al.,* (2007)** who founded that there were benefits of increased fluids only in the presence of sufficient fiber intake.

Concerning fibers intake, the result noted that less than half of control group compared to slightly less than three quarters of study group had adequate fibers intake post program with highly statistically significant difference between both groups. the result was in accordance with **Nour-Eldein, *et al*., (2014)** who mentioned that there was highly statistically significant increase of participants taking foods rich in fiber where (13%), (73.9%) of control and study groups respectively had adequate fibers intake post intervention.

Patients' knowledge score level regarding constipation within the study pre and post-program: the result represented that there was significant improvement in patients' knowledge about constipation where slightly less than three quarters of the studied patients registered average knowledge after implementing program compared to majority of them were with poor knowledge before implementing program. This result was in the same line with **Shokery, (2013)** who mentioned that majority of studied patients (94%) had satisfactory knowledge post intervention while only (9%) of them had satisfactory knowledge before intervention.

Conclusion:-

The findings of the present study can be concluded that:-

1- Neurologic and orthopedic immobilized patients who received routine nursing care in control group were liable to have constipation in different levels compared to immobilized patients in intervention group hadn't constipation post program.

2-Nurses' knowledge about prevention and management constipation had significantly improved where (70%) of nurses had faire knowledge after implementing program compared to majority of them were with poor knowledge before implementing the program.

Recommendation:-

- Preventive measures that include bowel care, nutrition with adequate fibers and fluid, movement and changing position should effectively be implemented for patients who are assessed as being at constipation risk.

- The importance of implementing periodic in-service training program for nurses in all Departments regarding management and prevention of constipation among immobilized patients for continuous updating their knowledge and practice.

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