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Assessment of Knowledge and Self-efficacy among Patients with Colostomy

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Abstract: **Colostomy is not a disease, but a change in the approach body works that alters normal passage of elimination. It is a life-saving procedure and the corner stone for treatment of many gastrointestinal disorders. Colorectal cancer (CRC) is the most common cause of colostomy. Nursing assessment for colostomy patients' knowledge and self-efficacy should be done to investigate, identify and specify their needs and stoma care self-efficacy to help in putting the plan of care effectively based on their needs and to help those patients to cope with their problems which may be raised. Objective: Assess the knowledge and self-efficacy among patients with colostomy. Setting: This study was conducted at Alexandria Main University Hospital in the following settings: Colorectal Surgical Outpatient, Gastrointestinal Surgical Outpatient and Oncology Surgical Outpatient Clinics, Colorectal Surgical, Gastrointestinal Surgical and Oncology Surgical Units Subjects: A convenient sample of 60 adult patients. Tools: Two tools were used. Tool I: Knowledge of Patients with colostomy Structured Interview Schedule. Tool II: Stoma care self-efficacy Scale. Results: the study revealed that the majority (81.7%) of the studied patients had poor knowledge level, while 13.3% % of them had fair knowledge level and only 5% of them had good knowledge level. Whereas, it was found that more than two-thirds of the studied patients (68.3%) had low self-efficacy, while less than one-third (30.7%) of them had high self-efficacy. There was a statistically significant strong positive correlation between patients' overall knowledge mean percent score and overall self-efficacy mean percent score ($p< 0.001$). Also it was noticed that there was a statistical significant relation between patients' overall knowledge level and age ($p = 0.001$), gender ($p = 0.046$) educational level ($p = p=0.008$), previous training on stoma care ($p> 0.005$). It was revealed that; there was statistically significance relation between overall patients' self-efficacy level and age ($p = 0.011$), educational level ($p = 0.001$). Conclusion: Patients' knowledge and self-efficacy regarding colostomy was noticed to be poor knowledge and low self-efficacy. Recommendations: Developing and implementing educational programs for patients with colostomy in order to improve their knowledge and self-efficacy regarding colostomy care, involving family and caregivers who participate in colostomy patient's care.**

Keywords: **knowledge, Self-efficacy, colostomy.**

1. INTRODUCTION

Colostomy is a surgically created opening in the abdomen in which a part of the colon is brought outside the abdominal wall to create a stoma through which digested food (feces) passes out of the body into an external pouching system **(Campos et al., 2017; United Ostomy Associations of America [UOAA], 2020)**. In United Kingdom(UK), It was estimated that there are approximately 95,000 persons lived with a colostomy and that around 7,400 had permanent colostomies which carried out each

year **(Mohamed, Mahmoud & Abou-Zeid, 2014)**. In addition, according to the National Cancer Institute (NCI) in Egypt in 2012, the incidence of colostomy approximately represents 600 cases annually **(Ibrahim, Khaled, Mikhail, Baraka & Kamel, 2014; NazİK, Nazik & Gül, 2017)**.

Colostomy may be done for emergency or elective surgical procedures for the management of wide ranges of disorders of large intestine which include: colorectal cancer, Intestinal obstruction, colorectal trauma, diverticulitis, bowel ischemia and inflammatory bowel diseases. It is done for two main purposes either diversion of the colon or decompression of the colon **(Mohamed, Salem & Mohamed, 2017; Massenga et al., 2019)**.

Stoma influences many aspects of patient's lives; physical, psychological, social, sexual, and spiritual and causing problems in these aspects including; bowel irregularities as diarrhea and constipation, excessive gases, bad odor, sleep patterns disturbances, fear of leakage, changes in body image and self-image, depression, anxiety, and low self-esteem. They also, have decreased sense of reason for being alive and have decreased sense of inner peace. They feel that they aren't helpful. Patients with colostomy may experience changes in their lives especially related to their social network (work and leisure) and sexuality, aggravating their feelings of insecurity and fear of rejection **(Ayaz-Alkaya, 2019; Dhamnaskar et al., 2019)**.Patients after colostomy may suffer from complications that may occur early or late. These complications include; Stoma prolapse, retraction, laceration, stoma necrosis, stenosis, bleeding, parastomal hernia, skin irritation, and bowel irregularities **(Ayik, Özden & Cenan, 2020)**.

Patients after colostomy are assessed for their knowledge about normal characteristics of the stoma, colostomy care, nutrition, potential complications, management of colostomy problems, lifestyle modifications, and follow-up **(Pandey, Baral & Dhungana, 2015).** Self-efficacy (SE) assessment is also crucial. According to Bandura, It is one's belief in his or her ability to succeed in specific situations or accomplish a task **(Bandura, 1977; Hopkins, 2017**).

Stoma care self-efficacy refers to the conviction by patients with colostomy that they can successfully manage their stoma to minimize adverse outcomes **(Tao, Songwathana, Isaramalai & Wang, 2014**). There is an important role of self-efficacy in the process of stoma adaptation, stronger feelings of self-efficacy shortly after the operation predict higher coping with the stoma and its management and fewer psychosocial problems in the course of the first postoperative year. Stoma care self-efficacy appears especially important in the first phase after surgery. When patients are expected to take care of their stoma, their adjustment postoperatively is relatively good **[Bekkers, Van Knippenberg, Van Den Borne, & van Berge-Henegouwen, 1996; Summers, 2018).**

A colostomy is major surgery, so assessment of knowledge and self-efficacy among patients with a colostomy is very important and essential. This is done to identify and meet each need, minimize problems, improve confidence and overcome the challenges and problems that accompany stoma formation **(Rouholiman et al., 2018; Santos, Fava & Dázio, 2019).**

After assessing the patients' knowledge and self-efficacy, the nurse will be able to help the patients to change their poor health behavior in order to improve the quality of life and health promotion. Obtaining data helps them to develop the appropriate nursing care plan and health education program which based on the patients' needs and taking into consideration the patient's physical, psychological, spiritual, cultural, educational and social status **(Cheng, Meng, Yang& Zhang, 2013; Thompson, 2019).**

The nursing role is very important in providing continuity of teaching and care and promoting a healthy life for the patient through assessment of knowledge and self-efficacy. By using the nursing process, the nurse collaborates with the patients to meet their needs. The goal for assessment is to improve outcomes for the colostomy patient, correct misconceptions, and promote self-efficacy. Supporting and educating patients and their relatives after a colostomy are essential to living a stoma-friendly life **(Nieves et al., 2017).**

II. BODY OF ARTICLE

I- MATERIALS AND METHOD

MATERIALS

Research Design:

A descriptive research design was utilized for this study.

Setting:

- The study was conducted at Colorectal Surgical Outpatient, Gastrointestinal Surgical Outpatient and Oncology Surgical Outpatient Clinics, Colorectal Surgical, Gastrointestinal Surgical and Oncology Surgical Units at Alexandria Main University Hospital.

Subjects:

A convenient sample of 60 adults of both genders patients with colostomy admitted to the above mentioned settings.

The study sample was estimated based on Epi info program using the following parameters:

- Population size is 260 cases in year
- Expected frequency 50%
- Margin of errors 10%
- Confidence coefficient 95%
- Minimum sample size 60.

Inclusion criteria: Subjects were considered eligible to participate in the study if they met the following criteria:

- Conscious adult patients from age 20 to 60 years old.
- Able to communicate verbally.
- Agreeing to participate in the study.
- With temporary or permanent colostomy.
- Patients who attended for follow up after one month or more from hospital discharge after surgery.

Study Tools:

Two tools were used for data collection:

Tool I:

Knowledge of Patients with Colostomy Structured Interview Schedule.

This tool was developed by the researcher based on review of recent literature to identify the colostomy patient's knowledge (Abou El-fadle, 2009; Cheng, et al., 2013; Pandey& Dhungana, 2015; American Cancer Society, 2017; United Ostomy Association of America, 2017), **It consist of two parts:**

Part I: Patients' socio-demographic and clinical data:

This part included data related to:

Part I-a: Socio demographic data: It included the following data such as: age, gender, marital status, area of residence, level of education, occupation and monthly income.

Part I-b: Clinical Data: It was designed to obtain information related to: Patient's present history such as: diagnosis, type of colostomy, stoma site, duration of living with colostomy, type of current medications. In addition to patients' past history such as: previous training on stoma care, receiving pre-operative teaching, previous hospitalization and associated diseases.

Part II: This part addressed the knowledge of patients with colostomy. It was used to assess patient's knowledge in relation to the following items which include; knowledge regarding normal stoma characteristics, colostomy care, nutritional pattern, control and management of colostomy problems and/or complications, life style modifications and follow-up.

Scoring system

- Less than 50% was considered as poor.
- Scoring of 50% to less than 65% was considered as fair.
- Scoring of 65% to 100% was considered as good.

Tool (II): Stoma Care Self-Efficacy Scale:

It is 3 points Likert Scale that was adapted by the researcher from **(Bekkers et al., 1996).** It was consisted of 13 items on self-efficacy of managing a stoma to assess the general sense of perceived self-efficacy with the aim in mind to predict coping with daily hassles and adaptation after experiencing all kinds of stressful life events added to difficulties of the disease and managing the stoma.

Scoring System

Based on patients' answers will be scored on 3points Likert Scale varied from:

- Highly confident =3
- Fairly confident =2
- Not being confident at all = 1

The total statements will be summed up then converted into number and percentage.

Total patients' responses will be calculated as:

High scores refer to positive self-efficacy as subjective presence of ability.

Total Score = 100, whereas:

- Less than 50 = low (-ve) self-efficacy.
- More than 50 = high (+ve) self-efficacy.

Method

The study was accomplished as follows:

- **Written Approval:**

Approval from Ethical Research committee, Faculty of Nursing, Alexandria University was obtained.

An Official letter from Alexandria Faculty of Nursing was submitted to the director of the Alexandria Main University Hospital and to the director of nursing in order to obtain their approval for conducting the study, after explanation of the aim of the study.

- **Tool development:**

Tool I Knowledge of Patients with Colostomy Structured Interview Schedule was developed by the researcher based on review of the recent relevant literature in a simple Arabic language. In addition, (Tool II) was adapted by the researcher from (Bekkers et al., 1996) and translated to Arabic language.

- **content validity:**

The two tools were submitted to jury members of five experts in the field of Medical-Surgical Nursing, Faculty of Nursing, Alexandria University, to assure the content validity, completeness and clarity of items and appropriateness of translations. Every jury member was informed about the aim and method of the study. The necessary modifications were done, accordingly.

- **Reliability:**

The reliability of the tools was tested by using Alpha Cronbach's statistical test. Reliability coefficient value was 0.913 which is acceptable for knowledge tool and was 0.942 for Self-efficacy tool.

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- **Pilot study:**

Before embarking on the actual study, a pilot study was carried out on 6 patients that representing 10% of total studied subjects with colostomy to ascertain the clarity, feasibility and applicability of the developed tools, then the necessary modifications were done. Patients included in the pilot study were excluded from the total number of study subjects.

- **Data collection:**
- Data collection was started after securing the administrative approval.
- The final drafts of the developed tools were used to collect data in order to achieve the objective of this study.
- The data were collected during patient's follow-up after one month or more from hospital discharge after surgery by researcher from each patient using the individualized interview.
- After explaining the purpose of the study by the researcher, the interview session for each subject was required approximately 30 to 45 minutes.
- Data were collected in the morning shift in Sunday, Monday and Wednesday from each week. Sunday at the Gastrointestinal Surgical Outpatient Clinic, Monday at Colorectal Surgical Outpatient Clinic and Wednesday at Oncology Surgical Outpatient Clinic. Data was also collected at Colorectal Surgical Unit, Gastrointestinal Surgical Unit and Oncology Surgical Unit in Sunday, Monday and Wednesday.
- Data were collected throughout a period of 6 months from the beginning of June to the end of November 2020.
- **INDENTATIONS AND EQUATIONS**
  - Data were fed to the computer and analyzed using IBM SPSS software package version 25.
  - Qualitative data were described using number and percent.
  - Quantitative data were described using range (minimum and maximum), mean, and standard deviation.
  - Significance of the obtained results was judged at the 5% level.

The used tests were

1. **Chi-square test:** was used for categorical variables, to compare between different groups.
2. **Monte Carlo Test and Fisher's Exact Test** were used as an alternative for chi-square test in presence of many small expected values.
3. **Pearson coefficient:** to correlate between two normally distributed quantitative variables.

III. RESULTS

Table (1): Illustrates the frequency distribution of the studied patients regarding their socio-demographic characteristics.

Regarding age, the result of the study showed that less than half (48.3%) of the studied patients were in the age group (50≤ 60) years old, while about 5% were in the age group (20<30) years old. Concerning gender, it was found that most of the studied patients (60%) were males. Concerning marital status, it was evident that the highest percentage (68.3%) of the studied patients were married. Regarding the level of education, it was noticed that 43.3% of the studied patients were illiterate patients, while patients with primary, university education and who can read and write were 10% respectively. According to the area of residence, It was observed that more than half (58.3%) of the studied patients lived in the rural areas. In relation to occupation, it was observed that more than one third (35%) of the studied patients were housewives, while 20% were workers, 18.3% were not working, 15% were employee, 6.7% were retired and 5% were worked as businessmen. Regarding monthly income, more than two-third (68.3%) of the studied patients were considered their income not enough from patients' point of view to fulfill the daily requirements.

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Table (1): Frequency Distribution of the Studied Patients Regarding Their Socio demographic Characteristics (n = 60).

Patients' socio-demographic data	No.	%
Age in years:		
20 < 30	3	5.0
30 < 40	12	20.0
40 < 50	16	26.7
50 ≤ 60	29	48.3
Gender:		
Male	36	60.0
Female	24	40.0
Marital status:		
Single	7	11.7
Married	41	68.3
Divorced	1	1.7
Widow	11	18.3
Level of education:		
Illiterate	26	43.3
Read and write	6	10.0
Primary	6	10.0
Secondary	16	26.7
University	6	10.0
Area of residence:		
Rural	35	58.3
Urban	25	41.7
Occupation:		
Employee	9	15.0
Worker	12	20.0
House wife	21	35.0
Retired	4	6.7
Not-working	11	18.3
Businessman	3	5.0
Monthly income (patient's point of view):		
Enough	19	31.7
Not enough	41	68.3

Table (2): Illustrates the mean percent score of the overall levels of knowledge of patients with a colostomy.

The table showed that; more than half (65%) of the studied patients had a good knowledge level about normal stoma characteristics, while more than one-third (35%) of them had poor knowledge. Furthermore, more than half (61.7%) of the studied patients had poor knowledge level about colostomy care, while 15% of them had good knowledge. The majority (81.7%) of the studied patients had poor knowledge level about the nutritional pattern, but only 5% of them had good knowledge. Regarding colostomy problems and/or complications management, the majority (81.7%) of the studied patients had poor knowledge level, while only 5% of them had good knowledge. In relation to life-style modifications, less than two-thirds (61.7%) of the studied patients had poor knowledge level, while 11.7% of them had good knowledge. It was found that more than half (58.3%) of the studied patients had poor knowledge level about follow-up knowledge, while less than one-fifth (16.7%) of them had a good knowledge. Regarding overall knowledge level, the majority (81.7%) of the studied patients had poor knowledge level, while 13.3% of them had fair knowledge level and only 5 % of them had good knowledge level. The total mean score of the overall knowledge of patients with colostomy was (25.48 ± 12.87) and the total mean percent score was (36.40 ± 18.39).

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Table (2): Frequency Distribution of the Studied Patients According to Mean Percent Score of the Overall levels of Knowledge of Patients with a Colostomy.

Patients' Knowledge (n=60)	Poor (<50%)		Fair (50%- <65%)		Good (65% - 100%)		Total Score Mean ± SD	% Score
	No.	%	No.	%	No.	%		
Normal stoma characteristics	21	35.0	0	0.0	39	65.0	3.50 ± 2.43	58.33 ± 40.54
Colostomy care	37	61.7	14	23.3	9	15.0	4.57 ± 2.90	38.06 ± 24.13
Nutritional pattern	49	81.7	8	13.3	3	5.0	3.20 ± 2.70	26.67 ± 22.49
Colostomy problems and/or complications management	49	81.7	8	13.3	3	5.0	3.08 ± 2.52	25.69 ± 21.0
Life-style modifications	37	61.7	16	26.7	7	11.7	9.98 ± 4.80	41.60 ± 20.00
Follow-up	35	58.3	15	25.0	10	16.7	1.15 ± 1.20	28.75 ± 30.12
Overall Knowledge	49	81.7	8	13.3	3	5.0	25.48 ± 12.87	36.40 ± 18.39

Table (3): Illustrates frequency distribution of the studied patients according to their stoma care self-efficacy. The table showed that more than half (58.3%, 56.7%) of studied patients were not confident that they could prevent having stoma bleeding, damage, or obstructions and wear most of the preferable clothes respectively, while more than one fifth (23.3%) of them were not confident to take care of the stoma in the right way. The findings of the study also revealed that less than half (48.3%) of the studied patients were fairly confident that they could take care of the stoma in the right way and follow doctor's instructions regarding the stoma care and nutritional pattern respectively, while less than one fifth (16.7%, 15%) of them were fairly confident to eat and drink preferable food and wear most of the preferable clothes respectively. More than one third (38.3%) of studied patients were highly confident to take care of the stoma in the right way, while only 6.7% of them were highly confident to have an active satisfactory sexual relationship as usual before. It was found that more than two-thirds (68.3%) of the studied patients had low (-ve) self-efficacy, while less than one-third (30.7%) of them had high (+ve) self-efficacy. The total score of the overall self-efficacy (Mean ± SD) was (22.75 ± 8.07). The total percent score of the overall self-efficacy was (38.41 ± 30.91).

Table (3): Frequency Distribution of the Studied Patients According to stoma care self-efficacy. (n = 60)

Stoma Care Self-efficacy	Patients' Confident Level					
	Not Confident at all		Fairly Confident		Highly Confident	
	No.	%	No.	%	No.	%
Patient's Activities/ Performance						
Take care of stoma in the right way.	14	23.3	29	48.3	17	38.3
Prevent having skin problems	32	53.3	16	26.7	12	20.0
Prevent having stoma bleeding, damage or obstruction.	35	58.3	14	23.3	11	18.3
Follow doctor's instructions regarding the stoma care and nutritional pattern.	16	26.7	29	48.3	15	25.0
Wear most of the preferable clothes.	34	56.7	9	15.0	17	28.3
Eat and drink preferable food.	31	51.7	10	16.7	19	31.7
Gain new friendships and acquaintances.	24	40.0	18	30.0	18	30.0
Travel through regular transportations.	27	45.0	21	35.0	12	20.0
Inform the close friends about the stoma.	21	35.0	22	36.7	17	28.3
Inform other people about the stoma.	33	55.0	14	23.3	13	21.7
Go out to restaurants, cafes or public places as usual before.	31	51.7	16	26.7	13	21.7
Has active satisfactory sexual relationship as usual before. *	25	41.7	12	20.0	4	6.7
Perform physical activities as usual before.	24	40.0	24	40.0	12	20.0

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Overall Self-efficacy		
Low (-ve) self-efficacy <50	41	68.3
High (+ve) self-efficacy >50	19	31.7
Total Score		
Min. – Max.	12.0 – 39.0	
Mean ± SD.	22.75 ± 8.07	
Percent Score		
Min. – Max.	0.0 – 100.0	
Mean ± SD.	38.41 ± 30.91	

N.B: * All the previous observed items were applicable for most of the studied patients except the item regarding the active satisfactory sexual relationship 19 patients only that represented 31.7% were reported not applicable as those patients were not married.

Table (4): Illustrate the relationship between overall knowledge and socio-demographic data of the studied patients. The findings revealed that there was a statistically significant relationship between age and overall knowledge of the studied patients regarding colostomy care as p=0.001. The highest percentage for fair knowledge was for the favor of age of (30< 40) years old (62.5%) and poor knowledge for the favor of age of (as 50≤ 60) years old (53.1%). There was also, statistically significant relationship between patients' gender and overall knowledge as p=0.046, where the highest score for good knowledge were for the favor of males (100%). Moreover, there was statistically significant relation between patients' level of education and overall knowledge as p=0.008, where the highest score for good knowledge was for the favor of university education (66.7%). It was found that there was no statistically significant relationship between overall knowledge and marital status, occupation, area of residence and monthly income P value was >0.05.

Table (4): The Relationship between Overall Knowledge and Socio-demographic Data of the Studied Patients

Socio-demographic data	Overall Knowledge						Total (n=60)		Test of sig.	P
	Poor (n = 49)		Fair (n = 8)		Good (n = 3)					
	No.	%	No.	%	No.	%	No.	%		
Age in years:										
20 < 30	1	2.0	1	12.5	1	33.3	3	5.0	χ^2= 17.257*	MCp= 0.001*
30 < 40	6	12.2	5	62.5	1	33.3	12	20.0		
40 < 50	16	32.7	0	0.0	0	0.0	16	26.7		
50 ≤ 60	26	53.1	2	25.0	1	33.3	29	48.3		
Gender:										
Male	31	63.3	2	25.0	3	100.0	36	60.0	χ^2= 5.630*	MCp= 0.046*
Female	18	36.7	6	75.0	0	0.0	24	40.0		
Marital status:										
Single	5	10.2	1	12.5	1	33.3	7	11.7	χ^2= 4.332	MCp= 0.753
Married	33	67.3	6	75.0	2	66.7	41	68.3		
Divorced	1	2.0	0	0.0	0	0.0	1	1.7		
Widow	10	20.4	1	12.5	0	0.0	11	18.3		
Level of education:										
Illiterate	25	51.0	1	12.5	0	0.0	26	43.3	χ^2= 15.776*	MCp= 0.008*
Read and Write	5	10.2	1	12.5	0	0.0	6	10.0		
Primary	6	12.2	0	0.0	0	0.0	6	10.0		
Secondary	11	22.4	4	50.0	1	33.3	16	26.7		
University	2	4.1	2	25.0	2	66.7	6	10.0		
Area of residence:										
Rural	29	59.2	4	50.0	2	66.7	35	58.3	χ^2= 0.514	MCp= 0.874
Urban	20	40.8	4	50.0	1	33.3	25	41.7		
Occupation:										
Employee	4	8.2	4	50.0	1	33.3	9	15.0	χ^2=	MCp=

Worker	10	20.4	1	12.5	1	33.3	12	20.0	13.645	0.067
House Wife	19	38.8	2	25.0	0	0.0	21	35.0		
Retired	4	8.2	0	0.0	0	0.0	4	6.7		
Not-Working	10	20.4	1	12.5	0	0.0	11	18.3		
Businessman	2	4.1	0	0.0	1	33.3	3	5.0		
Monthly income (patient's point of view)										
Enough	13	26.5	4	50.0	2	66.7	19	31.7	χ^2= 3.636	^{MC}p= 0.152
Not enough	36	73.5	4	50.0	1	33.3	41	68.3		

n = number of studied patients χ^2: Chi square test

*: Statistically significant at $p \leq 0.05$ MC: Monte Carlo

Table (5): Illustrate the relationship between overall stoma care self-efficacy and socio-demographic data among patients with a colostomy. It was found that there was a statistically significant relationship between patients' age and overall self-efficacy as p=0.011, the highest percentage for high self-efficacy was for the favor of age of (30< 40) years old (31.6%), and the highest percentage for low self-efficacy was for the favor of age (50≤ 60) years old (58.5%). There was also, a statistically significant relationship between level of education and overall self-efficacy as p=0.001, the highest percentage for high self-efficacy were for the favor of secondary education (52.6%) and the highest percentage for low self-efficacy were for the favor of illiterate (56.1%). It was noticed that there was no statistically significant relationship between overall patients' self-efficacy and gender, marital status, occupation, area of residence and monthly income (from the patient's point of view) as P value was >0.05.

Table (5): The Relationship between Overall Self-efficacy and Socio-demographic Data.

Socio-demographic data	Overall Self-efficacy Scale				Total (n=60)		Test of sig.	P
	Low (-ve) Self-efficacy <50 (n = 41)		High (+ve) Self-efficacy >50 (n = 19)					
	No.	%	No.	%	No.	%		
Age in years:								
20 < 30	0	0.0	3	15.8	3	5.0	χ^2= 10.166*	^{MC}p= 0.011*
30 < 40	6	14.6	6	31.6	12	20.0		
40 < 50	11	26.8	5	26.3	16	26.7		
50 ≤ 60	24	58.5	5	26.3	29	48.3		
Gender:								
Male	26	63.4	10	52.6	36	60.0	χ^2= 0.629	0.428
Female	15	36.6	9	47.4	24	40.0		
Marital status:								
Single	3	7.3	4	21.1	7	11.7	χ^2= 3.314	^{MC}p= 0.338
Married	28	68.3	13	68.4	41	68.3		
Divorced	1	2.4	0	0.0	1	1.7		
Widow	9	22.0	2	10.5	11	18.3		
Level of education:								
Illiterate	23	56.1	3	15.8	26	43.3	χ^2= 15.682*	^{MC}p= 0.001*
Read and Write	5	12.2	1	5.3	6	10.0		
Primary	5	12.2	1	5.3	6	10.0		
Secondary	6	14.6	10	52.6	16	26.7		
University	2	4.9	4	21.1	6	10.0		
Area of residence:								
Rural	27	65.9	8	42.1	35	58.3	χ^2= 3.013	0.083
Urban	14	34.1	11	57.9	25	41.7		

Occupation:								
Employee	3	7.3	6	31.6	9	15.0	χ^2= 9.133	^{MC}p= 0.083
Worker	8	19.5	4	21.1	12	20.0		
Housewife	16	39.0	5	26.3	21	35.0		
Retired	4	9.8	0	0.0	4	6.7		
Not-working	9	22.0	2	10.5	11	18.3		
Businessman	1	2.4	2	10.5	3	5.0		
Monthly income (patient's point of view)								
Enough	11	26.8	8	42.1	19	31.7	χ^2= 1.400	0.237
Not enough	30	73.2	11	57.9	41	68.3		

n = number of studied patients *: Statistically significant at $p \leq 0.05$ 05

χ^2: Chi-square test MC: Monte Carlo

Table (6): Illustrates correlation between patients' overall knowledge mean percent score and overall self-efficacy mean percent score. The table revealed that there was a statistically significant strong positive correlation between patients' overall knowledge mean percent score (36.40%) and overall self-efficacy mean percent score (38.41%) at r: 0.629, p< 0.001.

Table (6): Correlation between Patients' Overall Knowledge Mean Percent Score and Overall Self-efficacy Mean Percent Score.

(n=60)	**Patients' Overall Knowledge**	**Overall Self-efficacy**
Total mean % Score	36.40 %	38.41 %
r (p)	0.629* (<0.001*)	

n = number of studied patients *: Statistically significant at $p \leq 0.05$ r: Pearson coefficient

IV. DISCUSSION

A colostomy is not a disease, but a change in the approach body works that alter the normal passage of elimination. It is a life-saving procedure and the cornerstone for the treatment of many gastrointestinal disorders including; colorectal cancer, intestinal obstruction, colorectal trauma, ulcerative colitis, Crohn's disease, and diverticulitis **(Silva, Andrade, Andrade & da Silva, 2017; Dincer & Çıtlak, 2019)**. Assessment of these patients' knowledge and self-efficacy is very important in colostomy patients for increasing patients' awareness of self-care and management and prevention or minimizing complications. Furthermore, it is important to the nurse both in planning care and in establishing a trusting relationship with the patients **(Burch; 2017, Bagheri, Sharifan, Behboudi Far, Pouresmail & Kavousi, 2017).** So, the present study was carried out to assess the knowledge and self-efficacy among patients with a colostomy.

Regarding patient's knowledge about normal stoma characteristics, the current study findings revealed that more than half of the studied patients had correct and complete answers related to knowledge about normal stoma color, appearance and normal peristomal characteristics. This may be due to the stoma and peristomal skin are obvious and easily noticed and seen by the patients. These findings were supported by **Pandey et al. (2015)** who found that more than half of the studied patients knew the color of normal stoma and normal peristomal characteristics. Moreover, this finding was contradicted by **Hussain, Afzal & Gilani (2020)** who found that most of the studied patients had incorrect answers or did not know the appearance of the normal stoma.

Concerning knowledge about colostomy care, the current study findings illustrated that the majority of studied patients had either incorrect or did not know the answer or gave correct incomplete answers, while only the minority had correct and complete answers regarding all items of colostomy care. From my point of view, these findings may be due to that most of the studied patients did not receive any teaching or training on stoma care. Moreover, in Egypt, in rural areas, people believe that they should provide care to patients over 50 years.

These findings were in the same line with the studies conducted by **Stoker (2016) and Geleta (2017)** which showed that the majority of studied participants did not have proper knowledge about colostomy care and factors that affect the frequency of changing stoma pouch, while only the lower proportion of them had proper knowledge. Also these findings were supported by **Scharlach, Barrie Robinson, Dal Santo, Guinta & Kelly Mills-Dick (2014) and Lim, Chan & He (2015)** who mentioned that most of the studied patients did not know about the convenient method of stoma and peristomal skin care, while the lower percentage of patients knew about emptying and cleaning of colostomy pouches and proper dealing with it during colostomy care.

Also, **Mohamed, Abou-Zeid, Hegazy & Hamdi (2012)** found that one-third of the study sample had correct dealing with a colostomy bag. They reported that colostomy patient needs to know the ability to perform normal stoma care, identify problems, care for peristomal skin and understand how to prevent and treat potential complications.

Regarding knowledge about the nutritional pattern for patients with colostomy, the present study findings revealed that the majority of studied patients had either incorrect or did not know answer or incomplete answers, while the minority had correct and complete answers related food causing; constipation, diarrhea, gases and offensive odor and amount of required daily fluid and benefits of daily fluid daily enough fluid intake. These results could be attributed to lack of health teaching given to the patients by nurses and physicians about nutrition and fluids and their importance.

These findings were consistent with **Hegazy, Ali, Mahmoud & Abou-Zeid (2014) (2014)** who reported that only less than one-quarter of the studied subjects' pre implementation of colostomy care guidelines had a satisfactory level of knowledge about diet change and sufficient fluid intake. More than half of patients reported that eggs and garlic are the most common meals which increase the flatulence and bad odor. These findings disagreed with the study of **Shrief & Mokhtar (2019)** who found that more than half of the studied patients' pre implementation of stoma care guidelines had a satisfactory level of knowledge about nutrition and daily fluid intake.

In relation to knowledge about control and management of colostomy problems and/or complications, the present study findings revealed that the majority of studied patients had either incorrect or did not know the answer or gave incomplete answers regarding colostomy complications and management/control of colostomy problems including; diarrhea, gases and offensive odor". The reason for this result might be related to a low educational level which contributes to decrease awareness about diseases and their complications. In addition, nurses did not give them information about colostomy complications and their management.

This result was explained by **Shrief & Mokhtar (2019)** who mentioned that most of their studied patients had a low educational level that resulted in unsatisfactory knowledge level related to stoma complications, while only one-tenth of them had a satisfactory level of knowledge. Also, current study results agreed with **Hegazy et al. (2014)** who detected that more than three-quarters of their studied patients' pre implementation of colostomy care guidelines had unsatisfactory knowledge levels related to complications and how to control odor and gas. In addition, they recommended that patients with a stoma require health education and improving quality of care to enhance their knowledge about stoma care, stoma complications, and control of stoma problems.

As regards knowledge about follow-up, the current study illustrated that more than half of the studied patients did not know the follow-up visits schedule, while only the lower percentage of them had correct and complete answers about warning signs and symptoms that require seeking immediate medical care. These results can be attributed to that most of them were from rural areas where there were lack of medical facilities for follow-up, and most of the hospitals found in urban areas which need a long distance to travel. Also, most of them did not receive information about discharge instructions about follow-up schedule. Besides, the fact that most Egyptian people seek medical care only when they feel sick.

These results were in the same line with **Hegazy et al. (2014) and Sherif & Mokhtar (2019)** who detected that the majority of the studied patients' pre implementation of colostomy care guidelines had an unsatisfactory level of knowledge about follow-up visits.

Regarding knowledge about life-style modifications, the current study findings detected that most of studied patients had either incorrect or did not know the answer or gave correct incomplete answers while only the minority had correct complete answers related to indoors activities, outdoors activities, exercise and rest and sleep needs. These findings may

be due to; lack of information given by the staff. In addition, most of the patients reported lack of desire to and fears about traveling due to fear of leakage of the pouch, odor or injury to the stoma, and change in body image. Moreover, the higher percentages of the studied patients were house wives that did not have awareness about the importance of exercise and considered that home duties as types of exercise.

This result was also explained by **Black (2011)** who found that anxiety and embarrassment following colostomy may lead to alteration in patients' life-style, including; the ability and desire to work and travel. Also, **Mohamed et al. (2012)** mentioned that less than one-fifth of the lower percentage of the studied patients had a satisfactory level of knowledge about correct clothes style and suitable clothes pattern.

Furthermore, these findings were in agreement with **Hegazy et al. (2014) and Mohamed et al. (2017)** who reported that most of the studied patients' pre implementing of colostomy care guidelines had unsatisfactory levels of knowledge regarding traveling preparations, physical activities and exercise. Moreover, the findings related to lifestyle were supported by **Hardt, Meerpohl, Metzendorf, Kienle, Post & Herrle (2019)** who mentioned that a high percentage of stoma patients suffered from restriction in physical activities and change in lifestyle e.g. (traveling, household chores, working, sports, and spare activities) due to lack of knowledge and lack of energy to engage in activities.

As regards the overall knowledge level, the current study findings revealed that the majority of the studied patients had poor knowledge, while the minority had either had fair or good knowledge level. These findings were supported by **El Sayed, Elhameed & Hassanen (2017)** who found that the majority of patients had poor knowledge of colostomy care throughout the study phases. Moreover, **Sherif & Mokhtar (2019)** found that nearly three-quarters of the studied patients had an unsatisfactory level of knowledge. The findings of the present study disagreed with **Pandey et al. (2015)** who found that most of their studied patients had adequate knowledge.

The current study findings may be a reflection of the low educational level. As well as most of the studied patients did not have previous training or teaching on stoma care, this may be attributed to staff shortage and work overload resulting from increase staff responsibilities and duties, so they did not have time to teach them.

Regarding self-efficacy of the colostomy patients, as for Preventing having stoma bleeding, damage or obstruction and preventing having skin problems, the findings of the present study revealed that more than half of the studied patients were not confident that they could prevent having stoma bleeding, damage or obstruction or prevent having skin problems. In relation to taking care of the stoma in the right way, the current study detected that less than half of the studied patients were fairly confident that they could take care of the stoma in the right way.

These findings may be due to a lack of knowledge of the studied patients about how to make colostomy care and fear of hurting, injuring, or damaging stoma during care that made them less confident. As well as the higher percentage of the studied patients were at age 50 ≤ 60 years old, so their family members believed that they should take care of the stoma instead of them. These findings were contradicted by **Hussain et al. (2020)** who found that the higher percentage of the study participants were fairly confident of taking care of them at home, outdoors and when they were ill.

Also, these results disagreed with **Pandey et al. (2015)** who mentioned that more than half of the studied participants were highly confident that they could take care of the stoma at the right way at home and prevent having stoma obstructions. The present study results were explained by **El Sayed et al. (2017)** and **Bulkley, McMullen, Grant, Wendel, Hornbrook & Krouse (2018)** who mentioned that patients with higher levels of knowledge about stoma care and those who can manage all aspects of care independently were more psychosocially adjusted and had higher self-esteem level to their stomas than persons with less knowledge and more dependence on others for care.

Concerning wearing most of the preferable clothes, traveling through regular transportation and telling other people about the stoma, the current study found that the higher percentage of the studied patients were not confident that they could wear most of the preferable clothes, travel through regular transportation or tell other people about the stoma. These findings may be due to low body image, embarrassment from gases and odor and fear of lack of social acceptance that may hinder them to have high confidence in these aspects. These findings were explained by **Wu, Chau & Twinn (2007)** who stated that no confidence in telling others about the stoma could reflect low self-esteem and being ashamed about having a stoma.

As regards following the doctors' and nurses' instructions regarding the stoma care and nutritional pattern, the present study found that more than two-thirds of the studied patients had fair or high confidence of following instructions given by doctors and nurses as reported by patients. This finding was in the same line with the study of **Thomas & Nirmal (2019)** about the self-efficacy of patients with a stoma in performing stoma care which mentioned that the majority of the study participants were fairly confident in following physicians and nurses' instructions.

As for having an active satisfactory sexual relationship as usual before, the current study found that most of the studied patients were not confident that they could have an active satisfactory relationship as usual before. This may be due to embarrassment and fear of rejection from the partner, hurting or harming the stoma, and reduction of libido. Furthermore, in our culture, partners do not discuss any sexual relations problems and there is no sexual counseling. This finding was supported by **Wu et al. (2007)** who mentioned that the majority of the stoma patients had a lack of confidence in relation to sexual activities and obtaining the same sexual satisfaction as it was before surgery.

Furthermore, the present study finding explained by **Gozuyesil, Taylan, Manav & Akil (2017)** who stated that permanent stoma caused deterioration in body image, self-esteem, spouse compatibility, and sexual functions. Moreover, **Radcliffe (2014) and Aktas (2015)** added that patients who consulted their partners' opinions on stoma establishment and participation in care had significantly higher confidence.

As regards the overall self-efficacy, the current study findings revealed that more than two-thirds of the studied patients had low self-efficacy. This result was supported by **Tobeek, Al Mezaien, Qalawa& Hegazy (2016)** who mentioned that about three-quadrants of the studied participants had low self-efficacy. These findings may be because the majority of the studied patients had a lack of knowledge that may lead to a lack of adjustment and coping with the stoma that leads to lack of confidence in the ability to manage their stoma. These findings were contradicted with **Pandey et al. (2015)** who found that more than half of the studied participants had high self-efficacy.

Regarding the relationship between patients' overall knowledge and socio-demographic data, it was found that there was a statistically significant relationship only between overall knowledge and age, gender, educational level. **Concerning age,** the highest percentage for fair knowledge was for the favor of age of (30<40) years old and poor knowledge for the favor of age of (50≤60) years old. This finding disagreed with **Chauhan, Sreedharan & Jindal (2017)** who mentioned that there was no significant relationship between knowledge and age and patients' age did not affect knowledge level.

Concerning gender, the male patients had a higher level of knowledge. These findings were emphasized by the study of **Shrief & Mokhtar (2019)** who stated that the adequacy of male patients regarding knowledge and their stoma practice was due to the need for maintaining their image than females who were housewives and were not especially occupied by this issue. In relation to educational level, the highest score for good knowledge was for the favor of university educated. This may be related to the fact that individuals with higher educational levels were more likely to have awareness and alertness about the importance of following the prescribed regimen and what should be done to maintain or enhance their compliance and health. This study finding was in the same line with the study done by **Chauhan et al. (2017)** who showed that knowledge had a positive significant association with the education level.

Regarding the relationship between overall Self-efficacy and socio-demographic characteristics, the current study found that there was only a statistically significant relationship between patients' overall self-efficacy and age and educational level. Concerning age, the highest percentage for high self-efficacy was for the favor of age of (30< 40) years old, and the highest percentage for low self-efficacy was for the favor of age (50≤ 60) years old. This finding was supported by **Wu et al. (2007)** who mentioned that age was negatively correlated with self-efficacy. These findings may be due to older patients could face more limitations in performing activities. This inability decreases their sense of confidence in self-care. These findings have disagreed with **Bazaliński et al. (2014)** who detected that age did not affect self-efficacy.

As regards educational level, the current study found that the highest percentage for high self-efficacy was for the favor of secondary education. This finding was in the line with **Wu et al. (2007) and Bazaliński et al. (2014)** who mentioned that patients who had secondary or higher education had higher self-efficacy than patients who had less than primary education.

Regarding the correlation between Patients' overall knowledge mean percent score and overall self-efficacy mean percent score, the current study findings revealed that there was a statistically significant strong positive correlation between patients' overall knowledge mean percent score and overall self-efficacy mean percent score. This result was agreed with the study of **Mohamed et al. (2017)** who mentioned that there were a highly positive correlation and statistically significant differences between total self-efficacy, total knowledge, and total practice. **Chen & Ning (2019)** also found that there was a statistical relationship between overall knowledge and overall self-efficacy.

From the above mentioned discussion, we can conclude that the majority of the current studied patients had poor knowledge level and low self-efficacy regarding colostomy care, which indicate the high need of establishing educational programs to improve patient's knowledge and self-efficacy.

V. CONCLUSION

Based on the study findings, it can be concluded that patient's knowledge and self-efficacy regarding colostomy management was noticed to be poor knowledge and low self-efficacy.

VI. RECOMMENDATIONS

Based on the findings of the present study the following recommendation are derived and suggested:

Recommendations for patients:

- Develop and apply an educational sessions in order to improve their knowledge and self-efficacy regarding colostomy care, involving family and caregivers during the education session to participate in such colostomy patient's care.
- Patients should be provided with simple, colored, illustrated, Arabic language guide booklet to provide them with the needed information regarding colostomy management.

Recommendations for Nurses:

- Training program for nurses about learning needs of colostomy patients to be well prepared to provide support, instructions and training for colostomy patients.
- Periodic scientific meetings among physicians and nurses must be conducted to discuss patient's problems and establish a comprehensive plan to meet colostomy patients' needs.

Recommendations for further researches:

- Replication of the same study on larger sample of colostomy patients at different geographical areas for evidence of the results and generalization.

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