

Effectiveness of a Tailored Educational Package for Patients with Colostomy on Their Adherence and Psychosocial Adjustment

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Abstract

Background: Colostomy reveals to the colon artificial opening which is on the abdominal surface. Usually, the patient with an ostomy may have the negative aspects of the stoma rather than its function. Patients do not know how to deal and care. So, most of them need training and education to improve their self-image, acceptance of a new lifestyle, and ability to self-care. **Aim:** This study aimed to evaluate the effectiveness of a tailored educational package for patients with colostomy on their adherence and psychosocial adjustment. **Study design:** A quasi-experimental design was utilized to meet the aim of this study was from June 2021, to February 2022. **Subject:** A convenient sample consisted of 86 patients. **Setting:** The study was conducted in surgery departments and surgery outpatient clinics at El-Demerdash Surgical Hospital which is affiliated to Ain Shams University Hospitals, Cairo Governorate, Egypt. **Data collection tools:** 1) Patients' interviewing Questionnaire included two parts; to get data in relation to the socio demographic characteristics, and present & past history. 2) Patients' bio-psychosocial needs questionnaire. 3) Patients' observational checklist. **Results:** Based on findings of the current study, the mean age (**Mean ±SD**) of the study was **42.63±7.6.**, in relation to adherence related to patients with colostomy, there was the more than three quarters of the studied patients had adherence to life style changes during follow up while less than one quarter before the program applying. Also, the majority of the studied patients post program had adherence to medication. Regarding the ostomates' adjustment inventory-23, there was more than half had high acceptance on post program stage and nearly half of the studied patients had high acceptance during follow up stage **Conclusion:** Based on findings of the current study, can be concluded that, teaching and training patients with colostomy through providing educational program had affect positively on their adherence and psychosocial adjustment. Regarding physical needs, nearly half of the studied patients had low needed during follow up stage while was nearly to two thirds of them before applying program had high physical needed. Also, there were nearly half of the studied patients had high acceptance post program and follow up stages, while regarding to social engagement there were nearly two thirds had good social engagement in post program and follow up stages. **Recommendations:** In service education should be provided in hospital to improve patients' performance regarding care and medication adherence. Proper training for patients and their families and continues needs assessment for patients with colostomy.

Keywords: Educational Package, Colostomy, Adherence and Psychosocial Adjustment

Introduction

Colostomy creation is one of the most common therapeutic interventions applied to pathological conditions of the colon and mainly to colorectal cancer (**Vonk-Klaassen, et al,2021**). Although colostomy is considered the most suitable therapeutic approach, it can inevitably cause problems for both physical and psychosocial functioning and affect quality of

life (QOL) by altering the patient's self-image, defecation patterns and lifestyles (**Yan, et al, 2020**).

Stoma formation can prolong the lives of patients and help them to return to a healthy life. However, this process may cause the individual to experience various problems in terms of physiological, social, and psychological aspects. Individuals with stoma experience

psychological problems such as depression, anxiety, changes in body image, low self-esteem, sexual problems, denial, loneliness, hopelessness, and stigmatization. Social problems are that loss of interest and less participation in social activities, avoidance of travelling, decreased working activities, worsening partner relationship, decreased contact with friends/relatives. These problems can adversely affect the individual's adaptation to stoma and ability to deal with stoma (Ayaz, 2022 & Borwell, 2022).

In advanced years, healthcare providers have progressed patient care outcomes through health education programs to increase patient care outcomes. Health education programs interventions can assist colostomy patients to develop their self-care behaviors, awareness and improve their social support. Education programs can be used in preparing patients for procedures, providing health information, teaching, coping strategies and facilitating self-care behaviors (Leser et al. 2019).

The assistance program aims to offer specialized professional support to patients outside the hospital environment, helping patients with colostomy in the transition from hospital to home care. Different strategies are used to assist these patients in developing skills for self-care and the required materials are provided. Therefore, it is imperative that the interdisciplinary team know the sociocultural and clinical characteristics of this clientele so as to carry out proper planning and implementation of effective strategies for this approach (Lenza, et al,2017)

Significance of the study

Approximately 100,000 people in the United States undergo operations that result in a colostomy or ileostomy each year (Goldberg & Aukett, et al. 2014). One report stated that there is an estimated range of 650 000 to 730 000 people live with a permanent ostomy in the United States (Cooke, 2018). Colostomy usually being as a result of colorectal cancer surgeries as a treatment. So, in Egypt, the Colorectal cancer consider the 7th commonest cancer, representing 3.47% of male cancers and

3% of female cancers. In addition, patients with stoma may suffer from psychological morbidity, functional and physical hurt, and diminished of their quality of life (QOL) (American Cancer Society,2017).

Aim of the Study

This study aimed to evaluate the effectiveness of a tailored educational package for patients with colostomy on their adherence and psychosocial adjustment through the following:

- 1- Assessment of needs for of patients with colostomy.
- 2- Developing and implementing of tailored educational package for patients with colostomy.
- 3- Evaluating the effectiveness of a tailored educational package for patients with colostomy on their adherence and psychosocial adjustment.

Research Hypothesis

The current study hypothesized that:

Have a tailored educational package will affect positively on adherence and psychosocial adjustment of patients with colostomy.

Subjects and Methods:

The present study was carried out through the following four designs:

1. Technical design.
2. Operational design.
3. Administrative design.
4. Statistical design.

1-Technical design:

The technical design includes; research design, setting, subjects and tools for data collection.

Research design:

A quasi-experimental design was utilized to meet the aim of this study.

Setting:

The study was conducted in surgery departments and surgery outpatient clinics at El-Demerdash Surgical Hospital which is affiliated to Ain Shams University Hospitals. Cairo Governorate. Egypt.

Subjects:

Based on power analysis, a convenient sample of 86 adult patients was recruited for the conduction of this study from the above-mentioned settings. They were selected using the sensitive analysis according to number of colostomy operation in El Demerdash hospital at 2020 (110 cases). **(Statistical records of El-Demerdash Surgical Hospital, 2020).**

Sample size:

Sample size was calculated by adjusting the power of the test to 80% and the confidence interval to 95% with margin of error accepted adjusted to 5% and a known total population of 86 patients using the following equation:

- Type I error (α) = 0.05
- Type II error (B) = 0.2
- With power of test 0.80

$$n = \frac{N \times p(1-p)}{\left[\left[N-1 \times (d^2 \div z^2) \right] + p(1-p) \right]}$$

$$86 = \frac{110 \times 0.5(1-0.5)}{\left[\left[110-1 \times (0.05^2 \div 1.96^2) \right] + 0.5(1-0.5) \right]}$$

N= Community size

z= Class standard corresponding to the level of significance equal to 0.95 and 1.96

d= The error rate is equal to 0.05

p= Ratio provides a neutral property = 50% **(Chow et al., 2007)**

Patients were selected according to the following criteria:

Inclusion criteria:

- Adult patients from both sexes, conscious, with colostomy.

Exclusion Criteria:

- Patients with neurological disorder (dementia, etc.).

D. Tools of data collection.**Tools for data collection:**

The study data was collected through the following four tools:

I- Patients' interviewing questionnaire (Appendix I):

It was developed by the researcher based on reviewing relevant literature **(Tobeek, 2016 and Sun et al, 2018)**, validity and reliability were tested. It included three parts as follows:

- **First part:** is concerned with patient's Socio-demographic characteristics; which included, age, sex, marital status, educational level, Job Nature, Residence, Living condition, and Monthly income).

- **Second part:** is concerned with Present and past history of patients including 4 closed ended questions such as (common causes of stoma, history of previous stoma, chronic disease, and family history for stoma).

II - Patients' bio-psychosocial needs questionnaire (Appendix II):

It was developed by the researcher based on reviewing relevant literature **(Basiony, 2008, Varghese,2011, Hooper, 2016 and Tobeek, 2016)**, validity and reliability were tested. It included four parts as follows:

- **First part:** is concerned with patient's physical needs; including 4 closed 9 ended questions such as (relieving fatigue and tiredness, self-care measures, skin care around colostomy, etc.).

- **Second part:** is concerned with patient's psychological needs; including 10 closed ended questions such as (coping with

colostomy, relieving of depression, maintaining safety and security, decrease anxiety from gases, odor, fullness and leakage, etc.).

• **Third part:** is concerned with patient's psychological needs; including 7 closed ended questions such as (maintaining social activities, increased social relation / support, maintaining adequate Insurance coverage, Feeling less loneliness etc.).

• **Fourth part:** is concerned with patient's educational needs; including 16 closed ended questions such as (definition and purpose of the stoma, fluid intake, daily life change, peristomal skin care, etc).

Scoring System of Patients' biopsychosocial needs:

The scoring system was adopted with rating ranging from 0 (No Need) to 1 (Needed) point for each item. Each question response was either no-need (0 grade) and needed (1 grade).

Score % = (the observed score / the maximum score) × 100

The total score was from 0-9 grades:

- Low 75%
- Moderate 50-75%
- High >75%

III - Patients' observationnel checklist (Appendix III):

This tool was adapted from **Maria and Lieske (2021)** to assess patients' performance regarding changing a pouching system, validity and reliability were tested, it composed of 16 steps.

Scoring system

The scoring system for the patients' observational checklist was as follows:

One grades for each step that done correctly, zero for step that not done, with total grade = 16 grade, for total (16) steps.

- The total level of patients' practice score was categorized as follows:

- ≥ 70 % was considered satisfactory.
- < 70 % was considered unsatisfactory.

Iv- Patients' adherence assessment tool (Appendix Iv):

It was used to assess the effect of a tailored educational package on adherence of patients with colostomy. It included three scales as follows:

• Medication Adherence Rating Scale:

This tool was adapted from **Thompson et al (2000)** to assess medication adherence; including 10 closed ended questions.

Scoring System

• The scoring system was adopted with rating ranging from 0 (Yes) to 1 (No) point for each item. Each question response was either No (1 grade) and Yes (0 grade).

• Score % = (the observed score / the maximum score) × 100 Practice comprises of 10 items and total score ranging 0-10 grades:

- Adherence >60%
- Not Adherence

• **Adherence to Lifestyle Changes scale:** This tool was adapted from **Thompson et al (2000)** to assess medication adherence; including 7 closed ended questions.

Scoring System

• The scoring system was adopted with rating ranging from 1 (Not at all) to 5 (Extremely) point for each item.

• Score % = (the observed score / the maximum score) × 100 Practice comprises of 7 items and total score ranging 0-35 grades:

- Adherence >60%

- Not Adherence <60%

• Dietary Recommendation Adherence Scale: This tool was adapted from **Morisky (2017)** to assess the level of adherence to dietary recommendation among patients with colostomy; including 10 closed ended questions.

Scoring System.

• The scoring system was adopted with rating ranging from 0 (Yes) to 1 (No) point for each item. Each question response was either No (1 grade) and Yes (0 grade).

• Score % = (the observed score / the maximum score) × 100 Practice comprises of 10 items and total score ranging 0-10 grades:

- Adherence >60%
- Not Adherence<60%

Scoring System of total domain of Adherence

The scoring system was adopted with rating ranging from 0 (Yes) to 1 (No) point for each item. Each question response was either No (1 grade) and Yes (0 grade). Score % = (the observed score / the maximum score) × 100 Practice comprises of 43 items and total score ranging 0-71 grades:

- Adherence >60%
- Not Adherence <60%

V- Ostomates' Adjustment Inventory-23 (oai-23) (Appendix V):

This tool was adapted from **Della Fiore et al (2019)**, it was used to assess the effect of tailored educational package on psychosocial adjustment of patients with colostomy. The colostomy adjustment inventory -23 (OAI-23) consists of 23 items, each measured on a 5-point Likert scale (0 – 4) with higher scores indicating better adjustment. Validity and reliability were tested. It included four factors as follows:

• **Factor 1 (Acceptance):** is concerned with patient's acceptance regarding colostomy; including 10 closed ended questions.

• **Factor 2 (Anxious Preoccupation):** is concerned with patient's anxious preoccupation regarding colostomy; including 6 closed ended questions.

• **Factor 3 (social Engagement):** is concerned with patient's social engagement regarding colostomy; including 4 closed ended questions.

• **Factor 4 (Anger):** is concerned with patient's anger regarding colostomy; including 3 closed ended.

• Scoring System of OAI-23

The scoring system was adopted with rating ranging from 1 (Strongly disagree) to 5 (Strongly agree) point for each item. Increasing the good Acceptance increases the score, while anxious preoccupation, social engagement and anger were inverse, total score range from 0 to 92 as follows,

- 0 – 30 Poor psychosocial adjustment.
- 0 – 30 Average psychosocial adjustment.
- 0 – 30 Good psychosocial adjustment.

• II. Operational design:

The Operational design includes preparatory phase, validity and reliability, pilot study, ethical consideration and fieldwork.

Preparatory phase:

It included reviewing of the current and more recent relevant national and international literature reviews concerning adherence and psychosocial adjustment of patients with colostomy of the various aspects of this issue in order to develop the tool of data collection.

- The tool was translated from English into Arabic and back translation was done.

- Validity and reliability:

Validity of the developed tools was tested using face and content validity. Validity was tested through a jury of 7 experts from

medical surgical nursing department, Ain shams university (4 professors, 2 assistant professors and one lecturer). The experts reviewed the tools for clarity, relevance, comprehensiveness and simplicity; minor modifications were done.

Testing reliability of the developed tools was done by alpha Cronbach test, alpha Cronbach test of total study tools were (0.814).

Pilot study

A pilot study was carried out on a group of 8 patients (10%) to test the applicability of the study and to test clarity of the designed questionnaires, as well as to estimate the time needed to conduct the study. The modifications were done for the used tools then the final form was developed. Patients of the pilot study were included in the study sample.

The ethical research considerations in the study included the following:

- The researcher clarified the objectives and aim of the study to patients included in the study.
- Patients' written consents to participate in the study were obtained.
- Names of studied patients were not being use in the study results
- The researcher assured maintaining anonymity and confidentiality of subjects' data.
- Patients were informed that they are allowed to withdraw from the study at any time without any pressure.

Field work:

The Sampling and data collection were started and completed within 9 months. The research lasted around 9 months, from June 2021 to February 2022. Prior to any data collection, the study's purpose was simply described to the patients who accepted to participate. The study was carried out through including two phases: implementation phase & evaluation phase.

A. Implementation phase:

- This phase started postoperatively at the surgery departments by interviewing 86 patients with colostomy to explain the aim and nature of the study as well as taking their approval to participate in the study prior to data collection.

- The study tools were filled in and completed by the researcher on 3 phases (pre, immediately post implementation of a tailored educational package and post 1 month (follow up)).

- The patients' assessment sheet was used to determine the patients' needs regarding colostomy as follows:

- Using Patients' Interviewing questionnaire to assess patients' needs was filled in by the researcher or by patients according to their level of education, took about 30:45 minutes to fill it in for every patient. Then the observational checklist was used to assess patients' performance regarding changing a pouching system, took about 10-15 minutes for every patient to be fulfilled by the researcher. Then patients' adherence assessment tool was filled in by the researcher or by patients according to their level of education, took about 20 minutes to fill it in for every patient. Also, ostomates' adjustment inventory -23 (OAI-23) was filled in by the researcher or by patients according to their level of education, took about 30 minutes to fill it in for every patient.

- Data collection was done 3 days / week (Sunday, Monday and Thursday) at the previously mentioned settings in morning and afternoon shifts.

- Based on patients' needs, the researcher developed a tailored educational package and designed it as a booklet in Arabic language including the following items: colostomy operation (definition, indication, types, preparation, post-operative instructions, medication, follow up), pain management strategies, principles of colostomy care and protection, physical exercise, nutrition, weight

management strategies, stress management strategies aiming at improving the adherence and psychosocial adjustment .

- The content of the tailored educational package for patients with colostomy was adapted from (Burgess-Stocks, 2020; Landmann, 2020; Society Nurses Continence, Ostomy, 2017; United Ostomy Associations of America, 2020).

- Delivering tailored educational package to all patients immediately post assessing patients' needs.

- Sessions of the tailored educational package were conducted in a classroom in the inpatient department. The classroom was quiet, well ventilated, well furnished, had adequate lightening, adequate spacing and supplies for implementation discharge planning.

- Sessions of the tailored educational package were included three theoretical sessions and two practical sessions, starting with greeting the patients while assuring patients' privacy and assessing the patients' motivation for learning. orientation about the tailored educational package 's purpose, time and content were done by using simple words and a tone of voice that shows interest, concern and friendliness.

- Each session of the tailored educational package had taken about 45-60 minutes / day for 3 days per week. Sometimes the sessions were conducted individualized or as for small groups; each group did not exceed three patients.

- The sessions were carried out for every patient according to their level of education and understanding. The teaching methods were as demonstration, small group discussion and role play, supported by using posters and booklet.

- Patients were allowed to ask questions in case of miss- understanding while listening and expressing interest for them. At the end of these sessions the researcher emphasized the importance of follow up visits.

- The booklet was handed for every patient and informed them that they allowed for one months studying the tailored educational package then evaluation was done.

B. Evaluation phase:

Written assessment tool (patients' interviewing questionnaire, patients' observational checklist, patients' adherence assessment tool and ostomates' adjustment inventory -23 (OAI-23) were used again immediately post and post 1 months of implementation of the tailored educational package. This was done to evaluate the effect tailored educational package on adherence and psychosocial adjustment of the studied patients.

III. Administrative Design:

An official letter was issued from the Faculty of Nursing, Ain Shams University to the director of surgery departments and surgery outpatient clinics at which the study was conducted, explaining the purpose of the study to obtain their permission to conduct this study.

IV. Statistical Design:

The data were collected, coded and entered into a suitable excel sheet. Data were transferred into SPSS. Quantitative data were presented as mean, standard deviation; comparison was done using X² test. Qualitative data were presented as percentages. The observed differences and association were considered as follows:

- Non-significant at $P > 0.05$
- Significant at $P \leq 0.05$
- Highly significant at $P < 0.001$

Limitations of study

Shortage of time; the length of hospital stay after the operation was very short in which sometimes two sessions were given at the same day during the morning and afternoon shift. Also, the time available for data collection

during follow-up phase was not sufficient, where most patients come from distant places and they need to leave the hospital early.

Results:

Table (1): Regarding demographic characteristics of the studied patients, **table 1** show that the mean age (**Mean \pm SD**) of the study was **42.63 \pm 7.6**. Regarding to the gender, 72.1% were males and 29.9.1% were females. About their marital status, 39.5 of the study were single. As regards their educational level, 19.8 % of the study was illiterate. Also, 60.5% of the study, their nature of job was required a physical effort. 51.2% of the studied patients resided in urban areas. In relation to monthly income, it was found that 60.5% of patients were insufficient.

Table (2): Regarding the present and past history for the studied patients, **table 2** reveals that, the common causes of stoma were 38.4 % due to Crohn's disease and 29.1% as result of bowel cancer. As regards the previous history of stoma, there is 80.2 % of the studied patients was had it. About the chronic diseases, 80.2% of the study had a chronic disease which was 24.6% of them with diabetes mellitus. In related to family history for stoma, only 89.5% of the studied patients had no history.

Table (3): In relation to the needed related to patients with colostomy, tables 3 shows that, on behalf the physical needs, 46.5% of the studied patients had low needed during follow up stage while was only 59.3 % before applying program had high physical needed. Regarding psychological, there were (48.8% and 9.3%) had high psychological needed pre and post program respectively. 52.3 % of the studied patients had low social needed in follow up stage. Also, 52.3 % of the studied patients had informational needs pre-program implementation. As regards the total needs, 57% had highly needs before the program while only 8.1% of the studied post program had highly needs with Pre and Post. χ^2 60.990 and P-Value <0.001**

Table (4): Regarding changing a pouching system/ Ostomy appliance, table 4 shows that, 87.2% of the studied patients has

unsatisfactory level regarding changing a pouching system/ Ostomy appliance before implantation of the program (Pre- program), while post program and during follow up stages, there are 91.9 % and 82.6 % respectively has a satisfactory level of changing a pouching system/ Ostomy appliance.

Table (5): In relation to adherence related to patients with colostomy, table 5 reveals that, 89.5 % of the studied patients has adherence to life style changes during follow up while it was 8.1 % before the program applying. Also, 95.3% of the studied patients post program has adherence to medication, while it was 7.0% Pre-program. Regarding the total adherence pre-program was 8.1% but post program applying and during follow up are 95.3% and 88.4% respectively.

Table (6): In relation to the ostomates' adjustment inventory-23, table (6) shows that there is 52.3% and 47.7% of the studied patients has high acceptance post program and follow up stages respectively, while regarding to social engagement there is 65.1% and 58.1% has good social engagement in post program and follow up stages respectively. Also, regarding to the total psychological adjustment inventory there is 62.8% and 57.0% has a good psychological adjustment inventory in post program and follow up stages respectively.

Table (7): Regarding the relation between patients score of needed related to patients with colostomy according to their socio-demographic data, table (7) reveals that there is a highly significant relation with educational level and monthly income Post program and during follow up stages which P- Values is <0.001, while there is insignificant relation with ages and P-Values >0.05 which is 0.634 post-program applying while t-test is 0.821.

Table (8): Regarding the correlation matrix between total score of needed related to patients with colostomy; changing a pouching system/ ostomy appliance; adherence related to patients with colostomy and Ostomates' adjustment inventory-23 (OAI-23) in post-program, there is a highly significant correlations between total score of needed with total score of OAI-23, total score of adherences and total score of practice which P-Values <0.00

Part I: Demographic characteristics of study nurses:**Table (1): Frequency and percentage distribution of demographic characteristics for the studied patients (n=86).**

Socio-demographic characteristics	No.	%
Age (years)		
20-<30 years	17	19.8
30-<40 years	26	30.2
40-<50 years	26	30.2
≥50 years	17	19.8
Mean ±SD	42.63±7.6	
Gender		
Male	62	72.1
Female	24	27.9
Marital status		
Single	34	39.5
Married	35	40.7
Widow	17	19.8
Educational level		
Illiterate	17	19.8
Read and write	34	39.5
Primary and secondary	18	20.9
University	17	19.8
Job Nature		
Mind effort	9	10.5
Physical effort	52	60.5
Not work	25	29.1
Residence		
Rural	42	48.8
Urban	44	51.2
Living condition		
Live alone	8	9.3
Live with relatives	34	39.5
Live with spouse/ husband	44	51.2
Monthly income		
Sufficient	34	39.5
Insufficient	52	60.5
More than enough	0	0.0

Table (2): Frequency and percentage distribution of present and past history for the studied patients (n=86).

Present and past history	No.	%
Common causes of stoma		
Diverticular disease	12	14.0
Bowel cancer	25	29.1
Ulcerative colitis	16	18.6
Crohn's disease	33	38.4
History of previous stoma		
Yes	17	19.8
No	69	80.2
Chronic disease		
No	17	19.8
Yes	69	80.2
Diabetes mellitus	17	24.6
Hypertension	25	36.2
Kidney disease	9	13.0
Upper & lower respiratory disease	9	13.0
Cardiac disease	9	13.0
Family history for stoma		
Yes	9	10.5
No	77	89.5

Table (3): Frequency and percentage distribution of the studied patients needed related to patients with colostomy (pre/ post/ follow up) (n=86).

Needs related to patients with colostomy	Measurements	Pre program		Post program		Follow up		Pre-Post		Pre-FU	
		No.	%	No.	%	No.	%	x ²	p-value	x ²	p-value
Physical needed	Low needed	4	4.7	43	50.0	40	46.5				
	Moderate needed	31	36.0	37	43.0	33	38.4	68.417	<0.001**	52.080	<0.001**
	High needed	51	59.3	6	7.0	13	15.1				
Psychological needed	Low needed	6	7.0	36	41.9	33	38.4				
	Moderate needed	38	44.2	42	48.8	40	46.5	44.749	<0.001**	34.034	<0.001**
	High needed	42	48.8	8	9.3	13	15.1				
Social needed	Low needed	3	3.5	50	58.1	45	52.3				
	Moderate needed	25	29.1	29	33.7	29	33.7	81.991	<0.001**	67.275	<0.001**
	High needed	58	67.4	7	8.1	12	14.0				
Patient's information needs	Low needed	7	8.1	38	44.2	33	38.4				
	Moderate needed	34	39.5	40	46.5	38	44.2	47.672	<0.001**	32.122	<0.001**
	High needed	45	52.3	8	9.3	15	17.4				
Total needed	Low needed	5	5.8	42	48.8	38	44.2				
	Moderate needed	32	37.2	37	43.0	35	40.7	60.990	<0.001**	46.362	<0.001**
	High needed	49	57.0	7	8.1	13	15.1				

p-value >0.05 NS; *p-value <0.05 S; **p-value <0.001 HS

Table (4): Frequency and percentage distribution of the studied patient's observational checklist about changing a pouching system/ Ostomy appliance (pre/ post/ follow up) (n=86).

Changing a pouching system/ Ostomy appliance	Pre program		Post program		Follow up		Pre-Post		Pre-FU	
	No.	%	No.	%	No.	%	x ²	p-value	x ²	p-value
Satisfactory >70%	11	12.8	79	91.9	71	82.6				
Unsatisfactory <70%	75	87.2	7	8.1	15	17.4	104.622	<0.001**	81.129	<0.001**
Total	86	100.0	86	100.0	86	100.0				

p-value >0.05 NS; *p-value <0.05 S; **p-value <0.001 HS

Table (5): Frequency and percentage distribution of the studied patients adherence related to patients with colostomy (pre/ post/ follow up) (n=86).

Adherence related to patients with colostomy	Measurements	Pre program		Post program		Follow up		Pre-Post		Pre-FU	
		No.	%	No.	%	No.	%	x ²	p-value	x ²	p-value
Adherence to dietary recommendation	Adherence	4	4.7	83	96.5	75	87.2	141.508	<0.001**	114.713	<0.001**
	Not Adherence	82	95.3	3	3.5	11	12.8				
Adherence to lifestyle changes	Adherence	7	8.1	80	93.0	77	89.5	120.574	<0.001**	110.781	<0.001**
	Not Adherence	79	91.9	6	7.0	9	10.5				
Medication Adherence	Adherence	6	7.0	82	95.3	76	88.4	130.885	<0.001**	110.961	<0.001**
	Not Adherence	80	93.0	4	4.7	10	11.6				
Total Adherence	Adherence	7	8.1	82	95.3	76	88.4	127.504	<0.001**	107.667	<0.001**
	Not Adherence	79	91.9	4	4.7	10	11.6				

p-value >0.05 NS; *p-value <0.05 S; **p-value <0.001 HS

Table (6): Frequency and percentage distribution of the studied patients Ostomates' adjustment inventory-23 (OAI-23) (pre/ post/ follow up) (n=86).

Ostomates' adjustment inventory-23 (OAI-23)	Measurements	Pre program		Post program		Follow up		Pre-Post		Pre-FU	
		No	%	No	%	No	%	x ²	p-value	x ²	p-value
Acceptance	Low Acceptance	64	74.4	12	14.0	13	15.1	72.460	<0.001**	68.121	<0.001**
	Moderate Acceptance	18	20.9	29	33.7	32	37.2				
	High Acceptance	4	4.7	45	52.3	41	47.7				
Anxious preoccupation	Mild Anxious	7	8.1	53	61.6	49	57.0	79.525	<0.001**	74.470	<0.001**
	Moderate Anxious	20	23.3	27	31.4	30	34.9				
	Severe Anxious	59	68.6	6	7.0	7	8.1				
Social engagement	Low engagement	57	66.3	13	15.1	13	15.1	57.910	<0.001**	53.201	<0.001**
	Average engagement	18	20.9	17	19.8	23	26.7				
	Good engagement	11	12.8	56	65.1	50	58.1				
Anger	Mild Anger	4	4.7	61	70.9	58	67.4	44.676	<0.001**	44.722	<0.001**
	Moderate Anger	19	22.1	22	25.6	25	29.1				
	Severe Anger	63	73.3	3	3.5	3	3.5				
Total Psychological adjustment inventory	Poor psychological adjustment	60	69.8	9	10.5	12	14.0	74.290	<0.001**	64.318	<0.001**
	Average psychological adjustment	19	22.1	23	26.7	25	29.1				
	Good psychological adjustment	7	8.1	54	62.8	49	57.0				

p-value >0.05 NS; *p-value <0.05 S; **p-value <0.001 HS

Table (7): Relation between patients % score of needed related to patients with colostomy according to their socio-demographic data (N=86).

Socio-demographic data	Pre-Program (n=86)				Post-Program (n=86)				Follow Up (n=86)			
	Mean	±SD	Test	P-value	Mean	±SD	Test	p-value	Mean	±SD	Test	P-value
Age (years)												
20-<30 years	88.9	7.11			62.4	11.23			64.90	11.68		
30-<40 years	87.5	7.00	1.261	0.376	56.0	10.09	0.821	0.634	58.24	10.49	0.984	0.548
40-<50 years	84.2	5.46			59.7	9.13			62.09	9.50		
≥50 years	83.0	6.64			58.3	10.13			60.63	10.54		
Gender												
Male	85.0	6.96	1.299	0.286	55.3	9.05	0.755	0.677	57.51	9.41	1.331	0.413
Female	79.8	6.31			56.2	9.58			58.45	9.96		
Marital status												
Single	89.2	5.53			53.4	9.08			55.54	9.44		
Married	85.1	6.01	0.421	0.849	57.5	9.09	0.863	0.591	59.80	9.45	1.076	0.483
Widow	87.1	5.37			55.2	9.94			57.41	10.34		
Educational level												
Illiterate	80.0	6.40			66.8	12.02			69.47	12.50		
Read and write	81.8	6.54	1.005	0.505	65.2	11.74	4.976	<0.001*	67.81	12.21	6.797	<0.001*
Primary and secondary	82.7	6.61			57.8	9.97		*	60.11	10.37		*
University	79.3	6.34			55.4	10.40			57.62	10.82		
Job Nature												
Mind effort	87.6	7.00			53.4	9.61			55.54	9.99		
Physical effort	84.5	6.76	0.639	0.720	50.0	9.01	0.571	0.806	52.00	9.37	1.261	0.336
Not work	86.4	6.91			56.7	12.01			58.97	12.49		
Residence												
Rural	87.8	5.42	1.855	0.173	66.8	9.52	2.821	0.022*	69.47	9.90	5.770	<0.001*
Urban	83.8	5.90			52.9	12.03			55.02	12.51		*
Living condition												
Live alone	89.0	7.12			56.8	11.30			59.07	11.75		
Live with relatives	84.9	6.79	1.140	0.419	54.9	11.32	0.533	0.763	57.10	11.77	0.926	0.221
Live with spouse/ husband	83.3	5.86			55.9	10.06			58.14	10.46		
Monthly income												
Sufficient	85.7	6.86			64.6	11.27			67.18	11.72		
Insufficient	83.0	6.40	1.090	0.462	61.6	11.28	4.083	<0.001*	64.06	11.73	5.930	<0.001*
More than enough	86.0	6.88			54.1	9.73		*	56.26	10.12		*

Using: F-One Way Analysis of Variance; t-Independent sample t-test

p-value >0.05 is insignificant; *p-value <0.05 is significant; **p-value <0.001 is highly significant

Table (8): Correlation matrix between total score of needed related to patients with colostomy; changing a pouching system/ ostomy appliance; adherence related to patients with colostomy and Ostomates' adjustment inventory-23 (OAI-23) in post-program (n=86).

			Total score of needed	Total score of practice	Total score of adherence	Total score of OAI-23
Total score of needed	R			-0.714	-0.616	-0.771
	p-value			<0.001**	<0.001**	<0.001**
Total score of practice	R		-0.714		0.666	0.594
	p-value		<0.001**		<0.001**	<0.001**
Total score of adherence	R		-0.616	0.666		0.457
	p-value		<0.001**	<0.001**		0.026*
Total score of OAI-23	R		-0.771	0.594	0.457	
	p-value		<0.001**	<0.001**	0.026*	

r-Pearson Correlation Coefficient;

p-value >0.05 is insignificant; *p-value <0.05 is significant; **p-value <0.001 is highly significant

Discussion:

The stoma creation makes change in body appearance and function, which usually affect quality of life (QOL) of patients. In order to improve their QOL and achieve rehabilitation, specialized nursing and medical care should be interdisciplinary, including perioperative education, reception with physical, psychological, social and professional support and individualized therapy, to promote a more satisfactory acceptance of the new condition and helping them to follow care, continuous follow up and adherence to their treatment. (Silva, et al., 2017).

Regarding demographic characteristics of the studied patients, the present study showed that; the mean age (Mean \pm SD) of the study was 42.63 \pm 7.6. Also, more than two thirds of the study were males and less than half of them was single This finding is consistent with **Abouelela, et al., (2022)**, who stated that majority of the studied patients were more than 40 years old ranged from 18.0 to 61.00 years old and the majority was males in their study entitled; Effectiveness of Video-discharge Instructions about Colostomy Self-care on Awareness and Self-efficacy of Low-Literacy Patients. That findings support the researcher's point of view which consider that due to bad habits of men than women in Egypt as smoking, not doing exercise and eating unhealthy diet are risk factors for getting colon cancer.

As regards their educational level, less than one quarter of the study was illiterate. Also, more than half of the study, their nature of job was required a physical effort. In relation to monthly income, it was found that nearly two thirds of the studied patients were insufficient. This is due to the large number of family members and also the cost of buying bags, medical equipment and medications which usually has effect on their income. This finding is relevant to **Hegazy et al., (2016)**, who mentioned in their study that low level of income among the studied patients, which entitled; Assessment of Health Needs and Self-Efficacy for Patients with Colostomy.

Regarding the present and past history for the studied patients, the study revealed that, more than one third of the studied patients their main common causes of stoma was due to Crohn's disease and less than one third as result of bowel cancer. This is may be due to Crohn's disease usually require surgery. One kind of surgery is the creation of an ileostomy or colostomy, to bring a part of the intestine to wall of the abdomen with creating stoma. As regards the previous history of stoma, also, more than three quarters of the studied patients had a chronic disease which was nearly one quarter of them with diabetes mellitus.

These findings are consistent with **Abdulmutalib et al., (2018)**, who reported that

more than half of the studied sample had stoma had been due to bowel or colon cancer, in their study entitled: Effect of an Educational Protocol on Knowledge and Self-Care Practices among Patients with the Intestinal Ostomy.

In relation to the needed related to patients with colostomy, the study represented that, on behalf the physical needs, nearly half of the studied patients had low needed during follow up stage while was nearly to two thirds of them before applying program had high physical needed. Regarding psychological needs, there were nearly half had high psychological needed pre-program applying and less than one quarter had high psychological needed post program. Also, more than half of the studied patients had low social needed in follow up stage.

These findings are related with **Alkaya, S. (2018)**, in his study entitled; Overview of psychosocial problems in individuals with stoma. Who stated that colostomy may cause the persons to experience various problems in terms of psychological, physiological, and social, aspects. Patients with stoma experience psychological problems such as disturbance in body image, anxiety, depression, low self-esteem, denial, sexual problems, and stigmatization. Social problems are that less participation in social activities, and loss of interest, they usually have highly physiological, psychological and social needs requires improvement.

On the other hand, more half of the studied patients had informational needs pre-program implementation. As regards the total needs, nearly two thirds of the studied patients had highly needed before the program while only less than one quarter of the studied post program had highly needed. In the point of researcher's view, the most of patients with colostomy or stoma has not knowledge regarding the colostomy, complications, or treatment. So, any educational program would improve their informational needs.

Regarding changing a pouching system/ Ostomy appliance, the study showed that, more than four quarters of the studied patients has

unsatisfactory level regarding changing a pouching system/ Ostomy appliance before implantation of the program (Pre-program), while post program and during follow up stages, the majority of the study had a satisfactory level of changing a pouching system/ Ostomy appliance.

These findings are consistent with **Culha, et al., (2016)**, in their study entitled; Effectiveness of Self-care Education on Patients with Stomas, they stated that self-care agency scores increased in both intervention and control groups three weeks later and the increasing extent in the intervention group was higher than the control group which improved the patient's knowledge and skills regarding pouching change and stoma care. In the researcher point of view, usually patients undergoing surgeries needs health education prior the operation about the wound and how to care it after discharge and identifying the expected complications. So, patients' education and training skills has vital role in achieving patients' satisfaction postoperatively especially at home care.

In relation to adherence related to patients with colostomy, the current study revealed that, the majority of the studied patients had adherence to life style changes during follow up while it was less than one quarter before the program applying. Also, the majority of the studied patients post program had adherence to medication. Regarding the total adherence before applying the program, less than one quarter of them had adherence but post program applying and during follow up the majority of them had adherence.

This finding is related to **Sanches et al., (2017)**, who mentioned that health education regarding medications and care are important for patients with colostomy, and their study showed that the majority of patients reported receiving guidance on how to use their medication during their consultation or while the medication was dispensed, helped them on their medication adherence, which in study entitled; A Cross-sectional, Descriptive Study of Medication Use Among Persons With a Gastrointestinal Stoma.

In relation to the ostomates' adjustment inventory-23, the study showed that there were nearly half of the studied patients had high acceptance post program and follow up stages, while regarding to social engagement there were nearly two thirds had good social engagement in post program and follow up stages. Also, regarding to the total psychological adjustment inventory nearly two thirds of the studied patients had a good psychological adjustment inventory in post program and follow up stages.

These findings are consistent with **Danielsen et al., (2013)**, who revealed that patients who receive stoma care education adapt more quickly in their physical, psychological and social aspects and easily to this new condition, also have less anxiety and depression and have a better quality of life (QoL). As a researcher' point of view, the most of patients' knowledge and practices usually improve after engaging them in healthy training and educational programs, which has an important role in enhancing their lifestyle concept regarding their new condition.

Regarding the relation between patients score of needed related to patients with colostomy according to their socio-demographic data, the study revealed that there was a highly significant relation with educational level and monthly income post program and during follow up stages, while there was insignificant relation with post-program applying.

This finding is related to **Gautam et al., (2016)**, who stated in their study entitled: Effect of gender on psychosocial adjustment of colorectal cancer survivors with ostomy, that socio-demographic characteristics has effect on patient's adjustment and their needs, and recommended that colorectal cancer survivors with ostomy should be monitored for psychosocial concerns in regular basis and health care providers should tailor care based on their need. In the researcher point of view, the patients' psychosocial needs seem to have a positive effect on quality of life as well as on education level, income and cost of treatment.

Regarding the correlation matrix between total score of needed related to patients with colostomy; changing a pouching system/ostomy appliance; adherence related to patients with colostomy and Ostomates' adjustment inventory-23 (OAI-23) in post-program, there was a highly significant correlations between total score of needed with total score of OAI-23, total score of adherences and total score of practice. This finding is consistent with **Davis et al., (2020)**, who stated that, The QOL score of ostomates was less than the scores reported in the Western population and living with stoma significantly alters their lifestyle. Therefore, follow-up services and counseling services to the ostomates by the health-care professionals are needed and also, as self-efficacy is an essential component to live with stoma, appropriate preoperative counseling and postoperative follow-up services to patients and their families are essential to address multidimensional problems including psychosocial and sexual aspects.

Conclusion

The results of this study concluded that: Based on findings of the current study, can be concluded that, teaching and training patients with colostomy through providing educational program had affect positively on patients' adherence and psychosocial adjustment.

On behalf the physical needs, nearly half of the studied patients had low needed during follow up stage while was nearly to two thirds of them before applying program had high physical needed. Also, there were nearly half of the studied patients had high acceptance post program and follow up stages, while regarding to social engagement there were nearly two thirds had good social engagement in post program and follow up stages.

Recommendations:

Based upon the findings of this study, the following recommendations were made:

- In service education should be provided in hospital to improve patients'

performance regarding care and medication adherence.

- Proper training for patients and their families.

- Continues needs assessment for patients with colostomy.

- Further research studies are required concerning on the factors affecting quality of life for patients with colostomy.

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