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

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Abstract

Background: Colostomy can reveal the prosthetic colon aperture on the abdominal surface is visible. Instead than focusing on the function of the stoma, an ostomy patient often experiences its unpleasant elements. Patients lack the knowledge necessary to cope and provide treatment. To strengthen their sense of self, adopt a new way of life, and develop their capacity for self-care, the majority of them require instruction and training. **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**: In terms of adherence related to colostomy patients, more than three quarters of the studied patients had adherence to life style changes during follow-up, compared to less than one quarter prior to the program applying, according to the current study's findings. The mean age (Mean ±SD) of the study was 42.63±7.6. Additionally, the most of the individuals who were evaluated after the program exhibited drug adherence. Nearly half of the patients under study had high acceptance during the follow-up stage, and over half had high acceptance at the post-program stage, according to the Ostomates' Adjustment Inventory-23. **Conclusion**: The present study's results support the notion that educating and training colostomy patients through educational programs has a good impact on their adherence and psychological adjustment. In terms of physical demands, over two thirds of the patients had high physical needs before to applying for the program, while almost half of the patients under study had low needs during the follow-up phase. Furthermore, almost half of the patients in the study showed high levels of acceptance during the program and follow-up phases, and about two thirds had strong levels of social engagement during these same phases. **Recommendations**: Hospitals should offer in-service education to staff in order to enhance patient performance with relation to treatment and medication compliance. appropriate education for patients and their families as well as ongoing needs analysis for colostomy patients.

Keywords: Educational Package, Colostomy, Adherence and Psychosocial Adjustment

Introduction

The construction of a colostomy is a frequently employed therapeutic technique for pathological disorders pertaining to the colon, primarily colorectal cancer **(Vonk-Klaassen et al., 2021).** Despite being the most effective treatment option, colostomy might unavoidably lead to issues with physical and psychological functioning as well as worse quality of life (QOL) due to changes in the patient's self-perception, defecation habits, and lifestyle **(Yan, et al, 2020).**

Patients' lives can be prolonged and their transition back to health can be facilitated by stoma development. However, the person may encounter a number of physiological, social, and psychological issues as a result of this procedure. Psychological issues that stoma patients face include melancholy, anxiety, altered body image, low self-esteem, sexual dysfunction, denial, loneliness, hopelessness,

and stigmatization. Loss of interest and reduced social activity engagement, travel avoidance, a decline in job activities, deteriorating spouse relationships, and a decline in communication with friends and family are examples of social difficulties. A person's capacity to cope with and adjust to having a stoma may be negatively impacted by these issues **(Ayaz, 2022 & Borwell, 2022).**

Healthcare professionals have improved patient care outcomes in recent years by using health education initiatives. Colostomy patients can benefit from health education programs in terms of improved social support, self-care habits, and awareness. Programs for education can be used to educate coping mechanisms, prepare patients for operations, give health information, and encourage self-care practices **(Leser et al. 2019)**.

Assistance programs are designed to help patients with colostomies make the transition from hospital to home care by providing them with specialized professional support outside of the hospital setting. Various approaches are used to help these individuals learn how to take care of themselves, and the necessary supplies are given. Because of this, it is essential that the multidisciplinary team understand the sociocultural and clinical traits of this clientele in order to properly create and execute efficient tactics needed in such access **(Lenza, et al,2017)**

Significance of the study

An estimated 100,000 Americans have ileostomies or colostomies as a result of surgeries performed annually (Goldberg & Aukett, et al. 2014). According to one study, between 650 000 and 730 000 Americans are thought to be permanently ostomate users (Cooke, 2018). Colostomy is typically the consequence of surgery performed as a therapy for colorectal cancer. Colon cancer is therefore ranked as the seventh most prevalent kind of cancer in Egypt, accounting for 3.47% of malignancies in men and 3% in women. Patients with stomas may also have functional and physical harm, psychological morbidity, and a reduction in their quality of life (QOL) **(American Cancer Society,2017)**.

Aim of the Study

The purpose of this study was to assess how well a customized instructional program for colostomy patients affected their adherence and psychological well-being by using the following:

1- Assessing the bio-psychosocial requirements in colostomy patients.

2- Creating and executing a tailored educational package for colostomy patients.

3- Evaluating the effectiveness of a tailored educational package on colostomy patients' adherence and psychological well-being.

Research Hypothesis

The current study made the hypothesis that providing patients with colostomies with a tailored educational package would have a good impact on their adherence and psychological adjustment.

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 carried out at El-Demerdash Surgical Hospital, affiliated to Ain Shams University Hospitals in the Cairo Governorate of Egypt, in the surgical departments and outpatient clinics.

Subjects:

A suitable sample of 86 adult colostomy patients was collected for the this study from the aforementioned settings based on power analysis. They were chosen via the use of sophisticated analysis based on the 110 cases of colostomy surgeries performed at El Demerdash Hospital in 2020**(Statistical records of El- Demerdash Surgical Hospital, 2020)**.

Sample size:

The sample size was determined by applying the following equation with a known total population of 86 patients, 80% test power, 95% confidence interval, and 5% margin of error allowed.

- Type I error (α) = 0.05
- Type II error (B) = 0.2

- With power of test 0.80

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

$$86 = \frac{110 \times 0.50(1-0.50)}{\left[\left[110-1\times\left(0.05^2 \div 1.96^2\right)\right]+ 0.50(1-0.50)\right]}$$

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:

Validity and reliability tests were conducted, and the researcher built it based on a survey of pertinent literature **(Tobeek, 2016 and Sun et al, 2018).** There were the following two components to it:

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

II - Patients' bio-psychosocial needs assessment questionnaire :

The researchers assessed its validity and reliability after developing it on the basis of a survey of pertinent literature **(Hooper, 2016, Tobeek, 2016, United Ostomy Association of America, 2020 and Berti-Hearn&Elliott, 2021).** There were the following four components to it:

- **First part:** It addressed the physical requirements of the patient and included nine closed-ended (relieving exhaustion and tiredness, self-care measures, skin care surrounding colostomy, etc.).
- **Second part:** It addressed the psychological requirements of the patient and had ten closed-ended questions on managing a colostomy, easing depression, preserving safety and security, lowering anxiety related to gasses, odor, fullness, and leakage, among other topics.
- **Third part:** It addressed the social requirements of the patient and included seven closed-ended questions (keeping up social activities, boosting social relationships and support, keeping up enough insurance coverage, feeling less alone, etc.).
- **Fourth part:** Including sixteen closed-ended questions on the definition and purpose of the stoma, fluid intake, daily life changes, peristomal skin care, etc., it addressed the patient's educational requirements.

Scoring System of Patients' bio-psychosocial needs questionnaire:

Each component was given a score between 0 (No Need) and 1 (Needed) points when the scoring system was implemented. There were two possible answers for each question: needed (1 grade) and no-need (0 grade).

The total score was from 0-9 grades:

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

III - Patients' observationnel checklist :

This tool was adapted from **Maria and Lieske (2021)** to assess patients' performance regarding changing a pouching system, , 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 level of patients' practice.

▪ <70% was considered unsatisfactory level of patients' practice.

IV- Patients' adherence assessment tool:

It was applied to evaluate how a customized teaching package affected colostomy patients' adherence. Three scales were included, as follows:

1- Medication Adherence Rating Scale: This tool was adapted from **Thompson et al (2000)** to assess medication adherence; including 10 closed ended questions.

Scoring System

- A scoring system was implemented, wherein each item was assigned a point value between 0 (Yes) and 1 (No). The answers to each question were either Yes (0 grade) or No (1 grade).
- Practice comprises of 10 items and total score ranging 0-10 grades:
  - Adherence >60%
  - Not Adherence

2-Lifestyle Changes Adherence Scale: This tool was adapted from **Thompson et al (2000)** to assess lifestyle changes adherence; including 7 closed ended questions.

Scoring System

- A scoring system was implemented, with each item having a point value ranging from 1 (not at all) to 5 (very).
- Practice comprises of 7 items and total score ranging 0-35 grades:
  - Adherence >60%
  - Not Adherence <60%

3-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).
- Practice comprises of 10 items and total score ranging 0-10 grades:
  - Adherence >60%
  - Not Adherence<60%

Scoring System of total domains of Adherence

A scoring system was implemented, wherein each item was assigned a point value between 0 (Yes) and 1 (No). The answers to each question were either Yes (0 grade) or No (1 grade). The overall score ranges from 0 to 55 grades:

- Adherence >60%
- Not Adherence <60%

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

This tool was developed by Della Fiore et al. (2019) and was intended to evaluate the impact of a customized educational program on the psychological adjustment of colostomy patients. The 23 components that make up the Colostomy Adjustment Inventory -23 (OAI-23) are individually scored on a 5-point Likert scale (0–4), with higher scores denoting better adjustment. Testing was done on validity and reliability. The following four elements were among them:

- **Factor 1 (Acceptance):** was concerned with patient's acceptance regarding colostomy; including 10 closed ended questions.
- **Factor 2 (Anxious Preoccupation):** was concerned with patient's anxious preoccupation regarding colostomy; including 6 closed ended questions.
- **Factor 3 (social Engagement):** was concerned with patient's social engagement regarding colostomy; including 4 closed ended questions.
- **Factor 4 (Anger):** was concerned with patient's anger regarding colostomy; including 3 closed ended.
- **Scoring System of OAI-23**

Each item was given a point value between 1 (strongly disagree) and 5 (strongly agree) when the scoring system was implemented. The overall score ranges from 0 to 92 as follows: Anxiety, social engagement, and anger were inversely correlated with increased good acceptance.

- 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 chronbach test of total study tools were 0.814.

Pilot study

To determine the relevance of the study, assess the clarity of the questionnaires that were prepared, and determine how long the study would take to complete, a pilot study with eight patients (10%) was conducted. Following the development of the final form, the employed tools underwent alteration. The research sample comprised patients from the pilot investigation.

The ethical research considerations in the study included the following:

- The researchers 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 researchers 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:

Within nine months, the sampling and data gathering were initiated and finished. The study ran from June 2021 to February 2022, around nine months. The patients who agreed to participate in the study were just informed of its goal prior to any data gathering. Three steps were used in the study's execution: assessment, implementation, and evaluation.

A. Assessment phase:

During this phase the researchers were prepared the different data collection tools after reviewing extensive related literatures. Then, patients who meet the inclusion criteria were interviewed at surgery departments. At the same moment in time the nature, purpose of the current study and the ethical consideration mentioned previously were explained by the researchers to all patients under the study. After that, all patients who accept to participate in the current study were asked to sign a consent form.

B. Implementation phase:

- This phase started postoperatively at the surgery departments by interviewing 86 patients with colostomy .
- The study tools were filled in and completed by the researchers on 3 phases (pre, immediately post implementation of a special educational package and post 1 month (follow up).
- The patients' assessment sheet was used to determine the patients' needs regarding colostomy as follows:

- The researcher or the patients, depending on their educational background, completed the Patients' Interviewing questionnaire to determine the requirements of the patients. It took around 30:45 minutes to complete the questionnaire for each patient. The performance of the patients in changing a pouching system was then evaluated using the observational checklist. It took the researcher approximately ten to fifteen minutes to complete each patient. The researcher or the patients, depending on their educational background, completed the adherence evaluation form for each patient, which took around twenty minutes to complete. In addition, the Ostomates' Adjustment Inventory -23 (OAI-23) was completed for each patient in roughly thirty minutes, either by the researcher or the patients themselves, depending on the patients' educational background.

- Data collection was done 3 days / week (Sunday, Monday and Thursday) at the previously mentioned settings in morning and afternoon shifts.
- In response to the needs of the patients, the researcher put forth a customized educational package that was designed as an

Arabic-language booklet. The booklet contained information on colostomy operations (definition, indication, types, preparation, post-operative instructions, medication, follow-up), pain management techniques, colostomy care and protection principles, physical activity, nutrition, weight management techniques, and stress management techniques with the goal of enhancing 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.
- The customized educational program was delivered in an inpatient department classroom. The classroom was equipped with sufficient lighting, proper ventilation, appropriate lighting, acceptable space, and materials for discharge planning. It was also silent.
- Three theoretical and two practical sessions comprised the customized training program. The first two sessions involved welcoming the patients, respecting their privacy, and determining their level of enthusiasm to learn. The goal, duration, and substance of the customized instructional package were explained at orientation using straightforward language and an approachable, caring tone of voice.
- The customized learning program lasted for around 45 to 60 minutes per day, three days a week. At times, the sessions were carried out in small groups or individually with no more than three patients in each group.
- Every patient's education and comprehension level was taken into account when conducting the sessions. Posters and booklets were used to supplement the teaching strategies, which included role playing, small group discussions, and demonstration.
- In cases where patients did not understand, they were free to ask questions as long as they were being listened to and shown interest in. The researcher underlined the value of follow-up visits at the conclusion of these sessions.
- Each patient received a booklet explaining that after a month of studying the customized educational program, an assessment will be conducted.

C. Evaluation phase:

The patients' interviewing questionnaire, patients' observational checklist, patients' adherence assessment tool, and Ostomates' Adjustment Inventory -23 (OAI-23) were all re-used both immediately following and one month after the customized training package was put into place. This was done to assess how the patients under study's customized education package affected their adherence and psychological adjustment.

III. Administrative Design:

A formal letter outlining the study's goal and requesting permission to perform it was sent by the Ain Shams University Faculty of Nursing to the directors of the surgery departments and surgery outpatient clinics where it was conducted.

IV. Statistical Design:

All data were prepared, coded, and added to an appropriate Excel document. The data were imported into SPSS. The mean and standard deviation of the quantitative data were shown, and the X2 test was used to compare the results. Percentages were used to represent qualitative data. The following criteria were used to the observed differences and association:

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

Limitations of study

Time constraints: the post-operative hospital stay was quite brief, with occasionally two sessions conducted on the same day during the morning and afternoon shifts. Additionally, as most patients during the follow-up period are from far away and must leave the hospital early, there was not enough time for data gathering during this phase.

Results:

Table 1 provides demographic information on the patients under research. It indicates that the study's mean age (Mean ±SD) was 42.63±7.6 years. In terms of gender, there were 29.9.1% females and 72.1% males. 39.5 percent of the survey participants reported being single. In terms of education, 19.8% of the participants in the research were illiterate.

Additionally, 60.5% of the study's participants had jobs that involved physical exertion. 51.2% of the patients in the study were city dwellers. It was shown that 60.5% of patients did not make enough money each month.

Table 2 presents the current and prior medical histories of the patients under study. It shows that 38.4% of stomas were caused by Crohn's disease, whereas 29.1% were caused by bowel cancer. Eighty-two percent of the individuals in the study had a prior history of stoma. Regarding chronic illnesses, 24.6% of the participants in the study—or 80.2% of the total—had diabetes mellitus. Out of the individuals analyzed, only 89.5% had no family history of stomas.

Table 3: Concerning the needs associated with colostomy patients, Table 3 indicates that 46.5% of the patients under study had low physical requirements throughout the follow-up phase, compared to only 59.3% who had high physical needs before to applying for the program. In terms of psychological needs, the pre- and post-program rates were, respectively, 48.8% and 9.3%, high. In the follow-up stage, 52.3% of the patients under study had little social needs. In addition, 52.3% of the patients under study required information prior to the start of the program. In terms of overall demands, 57% of the investigated pre-program participants had high needs, but only 8.1% of the post-program participants had high needs (x2 60.990 and P-Value <0.001**).

Table 4: With regard to replacing an ostomy appliance or pouching system, Table 4 indicates that 87.2% of the patients under study had an unsatisfactory level of change prior to program implementation (pre-program). In contrast, 81.6% of patients had a satisfactory level of change during follow-up phases and post-program, respectively.

Table 5: Concerning adherence for colostomy patients, the data shows that 89.5% of the patients under study adhered to lifestyle modifications during follow-up, compared to 8.1% before to the program's implementation. Additionally, compared to 7.0% prior to the program, 95.3% of the patients under study now adhere to their prescription regimen. Total adherence prior to the program was 8.1%, but following the program and throughout the follow-up, it was 95.3% and 88.4%, respectively.

Table 6: With reference to the Ostomates' Adjustment Inventory-23, Table 6 reveals that 52.3% and 47.7% of the patients under study had high acceptance in the post-program and follow-up stages, respectively, and that 65.1% and 58.1% had good social engagement in the same stages. In addition, 62.8% and 57.0% of participants in the post-program and follow-up periods, respectively, had good psychological adjustment inventories overall.

Table (7) shows that there is a significantly substantial relationship between the monthly income and educational level of patients with colostomy scores of required based on their sociodemographic data. There is no significant relationship with ages and P-Values >0.05, which is 0.634 post-program application and t-test of 0.821, whereas P-Values <0.001 during follow-up stages and post-program.

In relation to the correlation matrix between the total score of needed for patients with colostomies, the total score of OAI-23, the total score of adherences, and the total score of practice in the post-program, **Table (8)** shows that there is a highly significant correlation between the total score of needed and the total scores of OAI-23, total adherences, and total practice, with P-Values <0.001.

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	68.417	<0.001**	52.080	<0.001**
	Moderate needed	31	36.0	37	43.0	33	38.4				
	High needed	51	59.3	6	7.0	13	15.1				
Psychological needed	Low needed	6	7.0	36	41.9	33	38.4	44.749	<0.001**	34.034	<0.001**
	Moderate needed	38	44.2	42	48.8	40	46.5				
	High needed	42	48.8	8	9.3	13	15.1				
Social needed	Low needed	3	3.5	50	58.1	45	52.3	81.991	<0.001**	67.275	<0.001**
	Moderate needed	25	29.1	29	33.7	29	33.7				
	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	47.672	<0.001**	32.122	<0.001**
	Moderate needed	34	39.5	40	46.5	38	44.2				
	High needed	45	52.3	8	9.3	15	17.4				
Total needed	Low needed	5	5.8	42	48.8	38	44.2	60.990	<0.001**	46.362	<0.001**
	Moderate needed	32	37.2	37	43.0	35	40.7				
	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	104.622	<0.001**	81.129	<0.001**
Unsatisfactory <70%	75	87.2	7	8.1	15	17.4				
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 Social engagement	57	66.3	13	15.1	13	15.1	57.910	<0.001**	53.201	<0.001**
	Average Social engagement	18	20.9	17	19.8	23	26.7				
	Good Social 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	1.261	0.376	62.4	11.23	0.821	0.634	64.90	11.68	0.984	0.548
30-<40 years	87.5	7.00			56.0	10.09			58.24	10.49		
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	0.421	0.849	53.4	9.08	0.863	0.591	55.54	9.44	1.076	0.483
Married	85.1	6.01			57.5	9.09			59.80	9.45		
Widow	87.1	5.37			55.2	9.94			57.41	10.34		
Educational level												
Illiterate	80.0	6.40	1.005	0.505	66.8	12.02	4.976	<0.001**	69.47	12.50	6.797	<0.001**
Read and write	81.8	6.54			65.2	11.74			67.81	12.21		
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	0.639	0.720	53.4	9.61	0.571	0.806	55.54	9.99	1.261	0.336
Physical effort	84.5	6.76			50.0	9.01			52.00	9.37		
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	1.140	0.419	56.8	11.30	0.533	0.763	59.07	11.75	0.926	0.221
Live with relatives	84.9	6.79			54.9	11.32			57.10	11.77		
Live with spouse/ husband	83.3	5.86			55.9	10.06			58.14	10.46		
Monthly income												
Sufficient	85.7	6.86	1.090	0.462	64.6	11.27	4.083	<0.001**	67.18	11.72	5.930	<0.001**
Insufficient	83.0	6.40			61.6	11.28			64.06	11.73		
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:

Patients' quality of life (QOL) is typically impacted by changes in the look and function of their bodies caused by stomas. A more satisfactory acceptance of the new condition and assistance with follow-up care, ongoing monitoring, and treatment adherence are all important aspects of interdisciplinary specialized nursing and medical care that can help patients achieve rehabilitation and improve their quality of life. This includes providing perioperative education, reception with physical, psychological, social, and professional support, and individual therapy **(Silva, et al., 2017).**

In terms of the patients' demographics under investigation, the current study revealed that the average age (Mean ±SD) was 42.63±7.6. Not only were men over two thirds of the research participants, but fewer than half of them were unmarried. This result is in line with the findings of **Abouelela et al. (2022),** who reported that in their study, Effectiveness of Video-discharge Instructions about Colostomy Self-care on Awareness and Self-efficacy of Low-Literacy Patients, the majority of the patients were male and aged between 18.0 and 61.00 years. These results corroborate the researcher's theory that colon cancer is more common in males than in women in Egypt as a result of poor eating habits, smoking, and inactivity.

Less than 25% of the research participants were illiterate in terms of schooling. Furthermore, almost half of the participants in the research had jobs that required physical exertion. It was shown that over two thirds of the patients under study had inadequate monthly income. This is because they have a large family and have to spend a lot of money on things like baggage, medical supplies, and prescription drugs, which normally cuts into their income. This result is pertinent to the research conducted by **Hegazy et al. (2016),** titled Assessment of Health Needs and Self-Efficacy for Patients with Colostomy, which noted that a low income level was present among the patients under investigation.

The study examined the current and prior medical histories of the individuals under investigation. It found that colon cancer accounted for fewer than one third of the patients' prevalent causes of stoma, whereas Crohn's disease caused more than one-third. Crohn's illness often necessitates surgery, which might be the cause of this. To create a stoma and bring a portion of the intestine to the abdominal wall, one type of surgery is ileostomy or colostomy formation. In addition, over 25% of the patients in the study had diabetes mellitus, making up over three quarters of those with a history of stoma.

These results are in line with those of **Abdulmutalib et al. (2018),** who found that in their study entitled Effect of an Educational Protocol on Knowledge and Self-Care Practices Among Patients with the Intestinal Ostomy, more than half of the studied sample had a stoma caused by bowel or colon cancer.

Regarding the demands associated with colostomy patients, the study showed that, in terms of their physical needs, around half of the patients under investigation had low needs during the follow-up phase, but nearly two thirds of them had high needs prior to applying for the program. About half of the participants had high psychological requirements before to program application, and less than 25% had high psychological needs following training. More than half of the patients in the study had little social needs during the follow-up period.

These results are close to a research by **Alkaya (2018)** titled Overview of Psychosocial Problems in People with Stomas. He said that having a colostomy might result in a number of psychological,

medical, and social issues for the individual. Psychological issues include disturbed body image, anxiety, despair, low self-esteem, denial, sexual issues, and stigmatization are experienced by stoma patients. Social difficulties include decreased engagement in social activities and disinterest; these issues are typically caused by very real physiological, psychological, and social demands that need to be met.

However, prior to the program's introduction, more than half of the patients in the study needed information. In terms of overall needs, less than 25% of the patients evaluated after the program had highly needed, compared to almost two thirds of the patients studied before the program. From the perspective of the researcher, the majority of patients who have a stoma or colostomy are unaware of the procedure, its problems, or available treatments. Therefore, any instructional initiative would meet their informative demands better.

When it comes to replacing an ostomy appliance or pouching system, the study revealed that over 75% of the patients had unsatisfactory levels of change prior to the program's implementation (pre-program). However, most of the study participants had satisfactory levels of change following the program and during follow-up phases.

These results are in line with **Culha et al. (2016)** in their study entitled: "Effectiveness of Self-care Education on Patients with Stomas," which found that three weeks later, self-care agency scores rose in both the intervention and control groups, with the intervention group experiencing a greater increase in this regard than the control group. This improvement in patient knowledge and skills related to pouching change and stoma care was achieved. According to the study, patients who are having surgery often require health education before the procedure regarding the wound, how to care for it after being released, and what problems to anticipate. In order to achieve patients' happiness after surgery, particularly when receiving home care, patients' education and training skills are crucial.

Regarding adherence in colostomy patients, the current study found that most of the patients had changed their lifestyles throughout follow-up, even if this was less than a quarter prior to the program's implementation. Additionally, the most of the individuals who were evaluated after the program exhibited drug adherence. Less than 25% of them had complete adherence before to program application, while most of them had adherence after program application and during follow-up.

These findings are related to those of **Sanches et al. (2017),** who noted that health education about medications and care is crucial for colostomy patients. Their study, A Cross-sectional, Descriptive Study of Medication Use Among Persons With a Gastrointestinal Stoma, revealed that most patients reported receiving instructions on how to use their medication during their consultation or while it was being dispensed, which helped them with their medication adherence.

According to the study, nearly half of the patients had high acceptance after the program and during the follow-up phases, and nearly two thirds had good social engagement at these times. These findings were based on the ostomates' adjustment inventory-23. Additionally, almost two thirds of the patients in the study had satisfactory psychological adjustment inventories during the post-program and follow-up phases, according to the overall psychological adjustment inventory.

These results are in line with those of **Danielsen et al. (2013),** who found that patients who receive education on stoma care adjust to their new condition more quickly and easily in all physical, psychological, and social domains. These patients also report lower levels of anxiety

and depression and higher quality of life (QoL). According to studies, most patients' habits and understanding generally improve after participating in health-related training and educational programs. This plays a significant role in improving the patients' perception of their new condition and how they should live.

The study found a highly significant relationship between patients' scores of needs related to patients with colostomies based on their sociodemographic data and their monthly income both during follow-up stages and after the program, but an insignificant relationship with post-program applying.

The present study finding is in agreement with **Gautam et al.'s (2016)** research, "Effect of gender on psychosocial adjustment of colorectal cancer survivors with ostomy," which found that sociodemographic factors influence patients' adjustment and needs. The authors suggested that healthcare providers should regularly monitor colorectal cancer survivors with ostomy for psychosocial concerns and customize care according to the patients' needs. From the standpoint of the researcher, the psychological demands of the patients appear to positively impact quality of life, education, income, and treatment costs.

The total score of needed with the total score of Ostomates' adjustment inventory-23 (OAI-23) and adherence related to patients with colostomies, changing a pouching system or ostomy appliance, and total score of practice were found to be highly significantly correlated in the correlation matrix between these variables in the post-program phase. This result aligns with the findings of **Davis et al. (2020),** who showed that having a stoma considerably changes a person's lifestyle and that ostomates' QOL ratings were lower than those of the Western population. Because self-efficacy is crucial for coping with a stoma, health care providers must provide follow-up and counseling services to ostomates. Appropriate preoperative counseling and postoperative follow-up services to patients and their families are also necessary to address multifaceted issues, such as psychosocial and sexual aspects of problems.

Conclusion

The results of this study concluded that: The present study's results support the notion that educating and training colostomy patients through educational programs has a good impact on their adherence and psychological adjustment.

Regarding physical demands, about two thirds of the patients had high physical needs before to applying to the program, while nearly half of the patients under study had low needs during the follow-up phase. Additionally, almost half of the patients in the study had high levels of acceptance during the program and follow-up phases, and almost two thirds had positive levels of social engagement during these same phases.

Recommendations:

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

- Hospitals should offer in-service education to staff in order to enhance patient performance with relation to treatment and medication adherence.
- Appropriate instruction for patients and their relatives.
- Maintains a needs assessment for colostomy patients.
- More investigation is needed on the variables influencing colostomy patients' quality of life.

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