

# Effectiveness of Structured Education on Patient's Knowledge and Practice Regarding Colostomy Care

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## ABSTRACT

**Objective:** Evaluating the effectiveness of structured education on patient's knowledge and practice regarding colostomy care.

**Methods:** A quasi-experimental study design (pre–posttest) was utilized to fulfill the aim of the study. The study was carried out in the outpatient surgery clinic at South Egypt Cancer Institute; a nonprobability convenient sample of 60 adult male and female colostomy patients was included in the study. Two tools were utilized; Tool I: A structured interviewing questionnaire sheet, including three parts: Part I: Demographic characteristics of the studied patients, Part II: Assessment of colostomy, and Part III: Patients' knowledge regarding colostomy (pre–post);

Tool II: A colostomy care observation checklist (pre/post).

**Results:** A highly statistically significant difference was found regarding total knowledge and practice scores of the studied sample pre- and post-application of the structured patient education. **Conclusions:** On light of the present study results, it can be concluded that structured patient education was found to be effective in enhancing patient's knowledge and practices, regarding stoma and peristomal skin care.

**Key words:** Colostomy, knowledge and practice, structured education

## Introduction

Since 1975, colorectal cancer is the third most common cause of cancer death in men. In the developed countries, it is the second most common cancer after lung in men. Colostomy is a surgical procedure where the normal bowel pass is interrupted with an artificial opening in the colon. Indications include cancer, obstruction, congenital defects, fistula, trauma, stricture, ischemia, thrombosis, and inflammatory disease.<sup>[1]</sup>

A colostomy may be temporary, needed for a period of time to allow a portion of the colon to heal; the colon may be rejoined at a later surgery (this could be weeks, months, or years later). Or it can be permanent, when a large part of distal colon is affected.<sup>[2,3]</sup>

Colostomy patients undergo a complex treatment with a wide range of adjustments effecting their social and psychological functioning.<sup>[4]</sup> The formation of the abdominal stoma represents a major change in the person's

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life and results in complex emotional, social, physical, and psychological concerns.<sup>[5,6]</sup> These concerns impact persons' life satisfaction, happiness, and overall quality of life.<sup>[7]</sup>

Colostomy patients experience difficulties functioning in work and social situation and have issues regarding sexuality and body image, difficulties with stoma function, anxiety about privacy when emptying the pouch, and always anxious about leakage, gas, traveling, and skin irritation.<sup>[8]</sup>

Patients with colostomy face huge problems in terms of need to receive suitable information to adapt them to this new situation.<sup>[9]</sup> The nurse as an educator must focus on giving appropriate health teaching to patients with generous feedback and evaluation to promote teaching.<sup>[10]</sup> Preoperative and postoperative colostomy patient education can facilitate adjustment, reduce complications, and improve overall quality of life.<sup>[11]</sup>

It has been reported that patient education might reduce the length of hospital stay, the frequency of postoperative complications, and the frequency of hospital readmissions.<sup>[12,13]</sup> Moreover, much professional effort has been put into patient's education and training.<sup>[14]</sup>

From the researcher's clinical experience, it has been observed that colostomy patients are in deficient knowledge level regarding care of colostomy, resulting in many complications leading to many readmissions. In this sense, this study was conducted to empower patients in the responsibility regarding colostomy care and stress the important role of information and education which will facilitate patients' daily life.

### **Aim of the study**

To evaluate the effectiveness of structured education on patient's knowledge and practice regarding colostomy care.

### **Research hypothesis**

Patients' knowledge and practices regarding colostomy care will improve after receiving the structured education.

## **Methods**

### **Research design**

Quasi-experimental study design (pre–posttest).

## **Tools**

### **Tool I: A structured interviewing questionnaire sheet including three parts**

- Part I: Demographic characteristics of the studied patients (age, gender, marital status, education, and occupation)
- Part II: Assessment of colostomy (duration, indication, and type of colostomy)

- Part III: Patients' knowledge regarding colostomy (pre–post): Covering the following – stoma products available, measuring stoma, changing stomal pouch, stoma irrigation, foods causing odor or gases, diet change, odor control, need for sufficient daily water intake, peristomal skin care, expected stoma complications, physical activities, traveling preparations, follow-up visits, and unusual signs requiring medical advice.

### **Scoring system**

This part consisted of three knowledge sections; first, patient information regarding the stoma and its care (22 points); second, information regarding diet and bowel function (18 points); and the third, general information regarding sexual function, driving, traveling, practicing exercises, type of suitable clothing, and follow-up (10 points). For each knowledge item, a correct response was scored as 2 and the incorrect zero. For each area of knowledge, the scores of its items were summed up and the total divided by the number of items, giving a mean score and standard deviation (SD) for this part; then, for total knowledge score, all parts summed and divided by number of parts, and these scores were converted into percent scores. Knowledge was considered satisfactory if the percent score was 50% or more and unsatisfactory if <50%.

### **Tool II: A colostomy care observation checklist (pre/post)**

It included the best practices regarding stoma and peristomal skin care, which was observed and measured by the researcher covering the following items – new pouch preparation, removal of the old pouch, pouch emptying, and stoma irrigation.

### **Scoring system**

The items of care were observed and checked on a 4-point Likert scale (0 = not done, 1 = weak, 2 = acceptable, 3 = good performance). For each area, the scores of the items were summed up and the total score divided by the number of items, giving a mean  $\pm$  SD score for the area, converted into percent scores. The observed practice was considered adequate if the percent score was 60% or more and inadequate if <60%.

### **Structured education guidelines**

These guidelines were designed based on colostomy patients' needs and level of understanding; these guidelines was prepared in the form of a booklet written in simple Arabic language with photo illustrations, containing two parts: The theoretical part which was delivered through lectures and group discussions, using data show and posters. It was provided in one session (about 45 min) and covered the following items: purpose and care of colostomy, daily life changes, elimination, diet regimen, traveling

preparations, physical activities, and follow-up visits, complications, and any unusual signs requiring immediate medical advice. The practical part was delivered through demonstration, redemonstration, and video illustration. It was given in two sessions (each about 45 min) and covered the following – measuring stoma size, emptying and changing the stoma pouch, stoma irrigation, and peristomal skin care.

### Participants and setting

The participants were chosen through nonprobability convenient sampling, 60 adult male and female colostomy patients with the following criteria – conscious, agree to participate in the study, with no critical or comorbid conditions, able to comprehend, does not have any mental or psychological problems, not having stoma or peristomal complications, and colostomy duration not more than 2 months. The participants were drawn from the outpatient surgery clinic at South Egypt Cancer Institute.

### Data collection

A pilot study was conducted in October 2017 to test clarity, completeness, feasibility, and practicability of the study tools on 10% of the sample. Patients in the pilot study were included in the main study as there were no modifications to the study tools.

Data were collected over a period of 9 months from October 2017 till the end of June 2018. The study tools were filled through direct patient interviewing. The purpose of the study was explained to all eligible patients at the beginning of the interview.

At the beginning of the interview, the researcher introduced herself to the patient to initiate line of communication, the nature and purpose of the study were explained, and the study tools were filled out before application of the structured education.

Patients included in the study were divided into small groups (3–5 each according to the flow of patients in each day), and the structured education was delivered to them.

Patient's education was provided in three consecutive clinic visits (each about 45 min, followed by 15 min for feedback and questions).

Patients were given a printed copy of the booklet which was in simple Arabic language with illustrated photographs for each practice.

Patients were given the contact number of the researcher for immediate contact if faced at any time with any problem or issue.

Patients were met for the evaluation of the effectiveness of the provided education 3 months from the first interview (evaluation was done using Tool I Part 3 and Tool II).

### Ethical approval

Informed consent was obtained from each patient participated in this study after the aim and nature of the study were explained to them, patients were ensured of their right to withdraw from the study at any time without rationale and with no effect on the treatment they are receiving, and the study was approved from faculty of nursing ethics committee.

### Statistical analysis

Data entry and statistical analysis were done using SPSS version 20.0 (Armonk, NY: IBM Corp. released 2011). Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables and means and SDs for quantitative variables. Cronbach's alpha coefficient was calculated for assessing the reliability of the developed tools through measuring their internal consistency. Qualitative categorical variables were compared using Chi-square test, multiple linear regression analysis was used, and analysis of variance (ANOVA) test was used for the full regression models. Statistical significance was considered at  $P < 0.05$ .

### Results

Table 1 illustrates that the mean age of the studied sample was  $35.6 \pm 14.4$  years and 61.6% were male. 73.4% were married and 26.6% were single. 63.4% had basic education, 26.6% were illiterate, and 10.0% were highly educated. Moreover, for occupation, 28.4% were manual workers, 26.6% were housewives, 25.0% were office employees, and 20.0% were unemployed.

Figure 1 shows that regarding indication for colostomy, 85.0% of the studied sample was related to malignancy and 15.0% other disease or trauma to the colon.

Figure 2 reveals the type of colostomy: 95.0% of the studied sample had a permanent colostomy and 5.0% had a temporary colostomy.

Table 2 presents a comparison of patient's total mean knowledge scores regarding stoma and peristomal skin care pre-application ( $42.1 \pm 14.3$ ) and post-application ( $75.7 \pm 18.6$ ) of the structured education with a highly statistically significant difference.

Table 3 demonstrates comparison of patient's mean  $\pm$  SD practice regarding stoma and peristomal skin care pre- and post-application of the structured education; regarding new pouch preparation, the mean  $\pm$  SD was  $39.1 \pm 11.5$  pre and  $86.0 \pm 28.3$  post; removal of the old pouch was  $26.5 \pm 10.7$  pre and  $68.1 \pm 30.8$  post; pouch emptying was  $60.8 \pm 17.5$  pre and  $84.3 \pm 25.3$  post; for stoma irrigation, it was  $32.2 \pm 20.2$  pre and  $88.0 \pm 30.1$  post; and finally, regarding total practice scores, it was  $41.9 \pm 12.6$  pre- and  $83.0 \pm 27.0$  post-application of the structured education

with a highly statistically significant difference in all practice items comparatively between pre- and post-application of the structured education.

**Table 1: Frequency distribution of demographic characteristics of the studied patients**

Variables	n=60, n (%)
Mean age±SD (years)	35.6±14.4
Gender	
Male	37 (61.6)
Female	23 (38.4)
Marital status	
Single	16 (26.6)
Married	44 (73.4)
Education	
Illiterate	16 (26.6)
Basic education	38 (63.4)
High education	6 (10.0)
Occupation	
Unemployed	12 (20.0)
Office employee	15 (25.0)
Manual worker	17 (28.4)
Housewife	16 (26.6)

SD: Standard deviation

**Table 2: Comparison of patient's total mean knowledge scores pre- and post-application of the structured education**

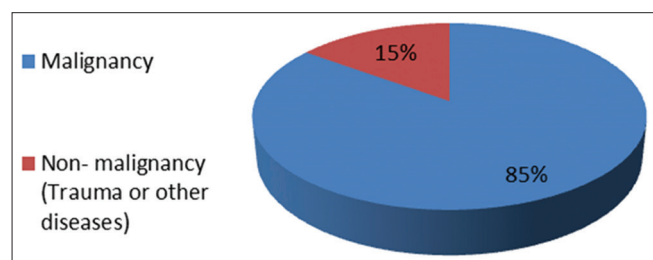
Total knowledge score	Time		p
	Pre	Post	
Mean±SD	42.1±14.3	75.7±18.6	0.001

SD: Standard deviation

**Table 3: Comparison of patient's mean±standard deviation practice scores pre- and post-application of the structured education**

Adequate stoma care practices (≥ 60%)	Time, mean±SD		p
	Pre	Post	
New pouch preparation	39.1±11.5	86.0±28.3	0.001
Removal of the old pouch	26.5±10.7	68.1±30.8	0.001
Pouch emptying	60.8±17.5	84.3±25.3	0.002
Stoma irrigation	32.2±20.2	88.0±30.1	0.001
Total practice scores	41.9±12.6	83.0±27.0	0.001

SD: Standard deviation



**Figure 1:** Indication for colostomy

### Content validity analysis

Tool validity was established by a panel of five experts (3 medical–surgical nursing professors and two oncology professors) from Asyut University. They reviewed the tools for clarity, relevance, comprehensiveness, understanding, and applicability.

### Reliability analysis

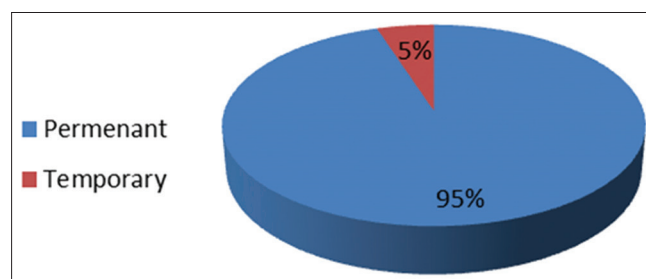
Reliability of the used tool was confirmed by alpha Cronbach's test at 0.90.

## Discussion

The results of the present study revealed that the mean age ± SD of the studied sample was 35.6 ± 14.4 years; this result comes in agreement with the study by Kadam and Shinde,<sup>[15]</sup> who found the highest percentage of age in their study between 31 and 40 years, while it contradicts the results by Mohamed *et al.*,<sup>[16]</sup> who found that the mean age ± SD was 55.7 ± 8.5 years. There was a male predominance and this comes in the same line with Mohamed *et al.*,<sup>[16]</sup> who found the highest percentage of their sample (63.3%) was male, and contradicts the results by Kadam and Shinde,<sup>[15]</sup> who found that colostomy was higher in female (66.66%); in my point of view, it might be related to different community colorectal cancer prevalence as the study agreeing with my study was conducted in the same country. The highest percentage of the sample was married and having basic education, which also was supported by Mohamed *et al.*,<sup>[16]</sup> relating to nearly same community characteristics, and was manual workers.

The majority of colostomy was for malignancy, and this is in the same line with the results by Silva *et al.*,<sup>[17]</sup> who reported that 90% of their sample had colostomy for malignancy.

A highly statistically significant difference was found regarding total knowledge score and practice scores of the studied sample pre- and post-application of the structured patient education. Kadam and Shinde<sup>[15]</sup> totally agree with this study results as they concluded that the structured education program applied in their study was highly effective to improve the knowledge and attitude score toward colostomy care of patients.



**Figure 2:** Type of colostomy

This study result also comes in concordance with the results by Lo *et al.* and Cheng *et al.*,<sup>[18,19]</sup> who reported an improved overall patient's knowledge and practice regarding stoma care.

Further, this result comes in total agreement with the results by Hegazy *et al.*,<sup>[20]</sup> who concluded that the educational guidelines implemented in their study had a positive effect on improving awareness (knowledge and practices) and self-efficacy among the studied patients with permanent colostomy.

The components of the different patient education programs in the studies, which were conducted by Haugen *et al.*, Herlufsen *et al.*, and Persson *et al.*,<sup>[21-23]</sup> focused on issues which are generally recognized to be important to patients following stoma creations, such as handling the stoma, availability of different kinds of appliance, nutrition, and sexuality.

### Limitations and recommendation

Patients were preoccupied with the consequences of their disease, so they need psychological counseling to physically and psychologically adapt to their new lifestyle.

All patients with colostomy need to be psychologically prepared by a qualified psychotherapist so that they can adapt and be ready to receive training on colostomy care before their discharge after surgery to independently take care of themselves.

### Conclusion

On light of the present study results, it can be concluded that structured patient education was found to be effective in enhancing patient's knowledge and practices regarding stoma and peristomal skin care.

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### Conflicts of interest

There are no conflicts of interest.

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