

Effect of Educational Guideline on Quality of Life and Self Efficacy for Adult and Adolescent Patients with Colostomy

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Abstract: Colostomy may be the best and safest form of treatment for a number of conditions including rectal cancer, trauma, or inflammatory bowel disease.

Aim: To assess the effect of educational guideline on the quality of life and self-efficacy for adult and adolescent patients with colostomy.

Study design: A correlation descriptive research design was adopted in this study.

Setting: The present study was conducted at the Outpatients Clinics in El-Demerdash Surgical Hospital and Pediatric Surgical Department Children's Hospital, affiliated to Ain Shams University.

Subjects: A purposive sample composed of 90 patients (45 adults & 45 adolescent) with colostomy, six months or more after finishing chemotherapy and-or radiotherapy, both sexes and their age not less than fourteen years.

Data collection tools: 1) Interview questionnaire, 2) Quality of Patients' Life Questionnaire, 3) Stoma Self-efficacy Patient Scale and 4) Patient Skin Assessment Observation Tool.

Results: The present study revealed that, mean ages of patients of the current study were 42.67 ± 8.3 and 15.82 ± 2.03 for adults and adolescents respectively, more than half of the patients were males. There was a highly statistically significant difference between levels of knowledge, there were highly statistically significant differences between patients' quality of life as well as between self-efficacy of patients with stoma pre, immediately and one month later after implementation of educational guideline.

Conclusion: Application of the educational guideline has a positive effect on enhancing all aspects of the quality of life domains (physical well-being, psychological well-being, social well-being and spiritual well-being), and all aspects of the self-efficacy (physical activity, psychological activity, social activity, colostomy care and preventing complications) for both adults and adolescence among patients with colostomy.

Recommendations: the educational guideline for patients with colostomy should be applied to improve patients' condition, quality of life and stoma self-efficacy, and there is a need for a simplified illustrated and comprehensive Arabic language booklet to be distributed to those patients and used as a reference.

Keywords: Educational Guidelines, Colostomy, ostomy.

1. INTRODUCTION

Stoma and ostomy are Greek terms meaning mouth or opening done to treat several benign and malignant intestinal conditions, due to a change in bowel habits, anatomically modified by surgical creation of an opening in the abdominal wall involving parts of the gastrointestinal tract. Formation of colostomy is sometimes necessary and at other times mandatory. The colostomy patients wear a disposable pouch to collect the stool. A colostomy may be temporary or permanent, depending on the medical reason for the surgery (*Krouse, Grant, & Wendel, 2014*).

Colostomy may be the best and safest form of treatment for a number of conditions including acute diverticulitis, rectal cancer, trauma, or inflammatory bowel disease (IBD). The IBD is reported to manifest during childhood or adolescence in 20–25% of patients. Canadian data estimates that 12% of individuals in the 17–24 year age group with ulcerative colitis require surgery, and approximately 26% of children with moderate to severe ulcerative colitis require surgery within 5 years of diagnosis because of treatment failure or an inability to control symptoms. It is estimated that there are approximately 70,000 people living with a colostomy in the UK and that around 6,400 patients had permanent colostomies which are carried out each year. In the future, the number of colostomies may increase (*United Ostomy Association of America [UOAA], 2015*). According to the National Cancer Institute in Egypt, approximately 2400 child had undergone colostomy through the year 2015 (*National Cancer Institute [NCI], 2016*).

Stomas in children are used for various purposes, including access, decompression, diversion and evacuation. Several types of intestinal stomas are recognized and the clinical condition often determines the segment of intestine selected, the type of stoma created and its external location, the main types of intestinal stomas are colostomy and ileostomy, and colostomy is one of the major pediatric surgeries in children (*Wong, 2013*). It is needed for a number of reasons such as colon cancer, diverticular disease, trauma or injury, imperforate anus, inflammatory bowel disease, partial or complete intestinal blockage, Hirschsprung's disease and fecal incontinence. While, in ileostomy, the stoma surgery is restricted to the small intestine on the lower right abdominal wall and affects only the rectum. This surgery is indicated for some conditions as ulcerative colitis, Crohn's disease, polyposis and cancer in the colon or rectum (*Timby, & Smith, 2008*).

After colostomy, the patients begin to have many physical changes such as loss of sphincter control, bowel sounds, gas, discomfort because of the odour, skin irritation, emotional and psychological changes such as modifying body image, lack of self-confidence, low self-esteem, and even their sexuality can generate anxiety, depression, and social isolation, which will decisively influence the quality of the patients life. Moreover, quality of life is an important issue for patients with colostomy. They have undergone mutilating surgery that can affect quality of life (*Cheng et al., 2013*).

Quality of Life (QOL) is defined as it is a multidimensional construct, representing an individual's subjective perception of physical, social and psychological well-being (*Jansen et al., 2011*). The QOL of colostomies might be impaired by various symptoms, such as leakage, skin irritation, and fluid and electrolyte imbalance. It is a broad ranging concept affected in a complex way by the persons physical health, psychological state, level of independence, social relationships, personal beliefs and relationship to salient features of environment. However, self-efficacy may lead them to the acceptance of colostomy, adaptation with it and to improve the quality of their life (*World Health Organization QOL [WHOQOL], 2014*).

Self-efficacy is concerned with patients beliefs in their capabilities to exercise control over their own functioning and over events that affect their lives. Beliefs in personal efficacy affect life choices, level of motivation, quality of functioning, resilience to adversity and vulnerability to stress and depression. Patients beliefs in their efficacy are developed by four main sources of influence. They include 1) mastery experiences, 2) seeing patients similar to oneself manage task demands successfully, 3) social persuasion that one has the capabilities to succeed in given activities, 4) and inferences from somatic and emotional states indicative of personal strengths and vulnerabilities (*Luszczynska et al., 2016*).

Education related to ostomized patients is an important nursing responsibility that should be carried out regardless of the care setting. The goal of self-care oriented nursing is to empower the patients and their families with the knowledge and skills necessary to reach optimal safe performance. Teaching sessions are important to prepare the patients and their families for life with an ostomy. Teaching a patient with a new stoma involves the techniques to use for cleansing, signs and symptoms of stoma or peristomal skin complications, cleaning the skin around the stoma, application and management of the pouching system, choosing eating, maintenance of a weight, exercise, and complications (*Turnbull, 2012*).

Educational guidelines are used as a means of patient education which inform and encourage practitioners to provide evidence-based care. Although considerable effort has gone into developing guidelines, little is known about the relative effectiveness of different ways of communicating them to potential users, and ensuring that they are incorporated into practice (*Beborah, 2013*).

Significance of the study:

Patients with colostomy face many difficulties both physical and psychological, added to the long term problems and impact of colostomy on patient's condition and interference with day-to-day living. Additionally, the presence of

colostomy itself is considered as a big problem which affects the body image of those patients, reduces in pleasurable activities and creates psychological problems, long-term effects on psychosocial development of children by affect their QOL, So, nurses should promote normalization, teach self-care of the ostomy as soon as possible after surgery. (*Rondelli, 2009, Turnbull, 2012*). Thus, the present study was conducted to determine the effect of educational guidelines on quality of life and self-efficacy for adolescent and adult patients with colostomy.

Aim of the work:

This study aims to evaluate the effect of educational guideline on quality of life and self-efficacy for adult and adolescent patients with colostomy.

Objectives of the study:

- 1- To assess knowledge, quality of life and self-efficacy of patients with colostomy.
- 2- To develop and implement educational guideline for patients with colostomy based on needs assessment.
- 3- To evaluate the effect of the educational guideline on the quality of life and self-efficacy of patients with colostomy.

Research hypothesis:

The current study hypothesized that:

The educational guideline will have a positive effect on the quality of life and self-efficacy of patients with colostomy.

2. SUBJECTS AND METHODS

Study design:

AcCorrelational descriptive research design was adopted in the current study.

Setting:

The study was carried out at the outpatients' clinics in El-Demerdash Surgical Hospital and Pediatric Surgical Department /Children's Hospital, affiliated to Ain Shams University.

Subjects:

A purposive sample composed of 90 patients (45 adults & 45 adolescents) with colostomy from both sexes under the following criteria: Patients aged from 14 to 65 years; six months or more after finishing chemotherapy and/or radiotherapy.

The sample size was calculated according to the equation of a sample size calculation based on the number of patients admitted to the outpatient clinics of Oncology and Nuclear Medicine Department affiliated to Ain Shams University Hospital. These were 600 patients in the year 2016.

Tools for data collection:

The study data were collected using the following four tools:

- 1) A structured interview questionnaire was developed by the researcher in Arabic. It includes the following two parts:

Part 1: A structured interview questionnaire to assess socio-demographic characteristics surgical and medical history of the studied subjects: this part was developed to assess patients' age, gender, marital status, level of education, employment, and surgical data of the patients which including type of colostomy, duration of colostomy, and medical problems.

Part 2: A structured interview questionnaire was developed by the researcher to assess patients' knowledge related to colostomy care. It was developed after reviewing the related literatures (*Burch, 2011; Rust, & Berry, 2012. Cronin, 2013*). It involves six subgroups containing 49 questions as follows: Knowledge about colostomy (5 true/false questions & 2 MCQ), knowledge about complications (4 MCQ), knowledge about stoma and skin care (10 true/false questions), knowledge about food and control of stool odor (8 true/false questions & 5 MCQ), knowledge about social relations (6 MCQ & 4 true/false questions), and knowledge about sport activities (5 true/false questions).

Scoring system:

Every question was given one score for the right answer and zero for the wrong or don't know answer. The total scores for patient knowledge were calculated for every subgroup, then for the total questionnaire, then categorized into satisfactory or unsatisfactory as follows: $\geq 60\%$ was considered satisfactory and $< 60\%$ was considered unsatisfactory. Total score 49 degrees.

2) Quality of Patients' Life Scale to assess quality of life for patients with ostomy.

This tool was adopted from City of Hope (*Beckman, 1983*). It contains 43 QOL items asking the patients about living with an ostomy using 10-point scales. These QOL items are divided into the four domains or subscales. as follows Physical well-being domain (11 items), Psychological well-being domain (13 items), Social well-being domain (12 items), Spiritual well-being domain (7items). This tool was translated into Arabic by the researcher, and retranslated to assure its accuracy.

Scoring system:

All the QOL items are rated on a 10-point scale ranging from 0 to 10; where zero reflects negative QOL outcomes and 10 reflects positive QOL outcomes. The mean score for all patients was calculated by summing up all patients' scores, and then divided it by their number.

3) Stoma Self-efficacy Patient Scale:

This tool was adapted from *Bekkers et al., (1996)* and modified by the researcher. It was used to assess self-efficacy of patients with stoma. It involves five subgroups containing 24 statements as follows: Physical activity (7 items), psychological activity (2 items), social activity (4 items), colostomy care (7 items) and preventing complications (4 items). This tool was translated into Arabic and retranslated by the researcher to assure its accuracy.

Scoring system:

The patients' responses of the 24 statements were on a scale ranging from can't (given zero score), can with (given a score of one) and can alone (given two scores).The total scores for patients' self-efficacy was calculated, the higher scores ($\geq 85\%$) indicate higher self-efficacy; while the lower scores ($< 85\%$) indicate lower self-efficacy.

4) Patient Skin Assessment Observation Tool:

The Ostomy Skin Observation Tool was adopted from *Coloplast Canada (2010)*. It was used to evaluate and monitor the condition of peristomal skin through observation. It contains three domains scored according to the extent of the involved peristomal area and the severity of change in the skin, including discoloration (D), erosion/ulceration (E), and tissue overgrowth (T).

Scoring system:

Discoloration; Normal skin was given zero score means absence of any visible change to epidermis while one score mean discoloration of the peristomal skin without complications and abnormal skin was given two scores if there is discoloration of the peristomal skin with complications.

Erosion: Normal skin was given Zero score means no erosion or ulceration while one score means damage to the upper layer of the skin without complications and abnormal skin was given two scores if there is damage to the lower layer of the skin with complications.

Tissue overgrowth and estimation of the size of the affected area:

Normal skin was given Zero score means no tissue overgrowth, while one score means raised tissue above skin layer without complications and abnormal skin was given two scores if there is raised tissue above skin level with complications.

Content validity and reliability:

Content validity was ascertained by a group of experts (7) from the Faculty of Nursing. Their opinions were elicited regarding the tools format layout, and scoring system. The contents of the tools were tested regarding the knowledge accuracy, relevance and competence. As for reliability the questionnaires were confirmed for consistency by Cronbach's alpha coefficient ($\alpha = 0.88$).

Ethical considerations and human rights:

In the planning stage, approval was obtained from the director of Outpatient Clinics at El-Demerdash Surgical and Children's Hospital affiliated to Ain Shams University. After explaining the purpose of the study, the participants approvals were taken after informing them that their participation is voluntary, and that they have the right to withdraw at any time without any consequences and without giving any reason.

Pilot study:

A pilot study was carried out on 10% of the total study sample to test the study process's clarity, feasibility and practicability of the tools in addition to the subjects and settings. The experts reviewed the tools for clarity, relevance, comprehensiveness and simplicity; minor modifications were done. Patients who participated in the pilot study were excluded from the main study sample.

Field work:

It was conducted through the following phases:

Sampling and data collection were started and completed during the period from September 2015 until January 2016. The purpose of the study was simply explained to the patients to obtain their cooperation for data collection and conduct the current study, anonymity, confidentiality of patients were assured.

Preparatory and planning phase:

To carry out this study, the necessary approval was obtained from the Director of the outpatient surgical and Pediatric Hospitals affiliated to Ain-Shams University Hospitals. All data collected regarding patients' knowledge concerning colostomy care were interpreted for identifying patients' needs. Data collection was done by the researcher at the out patients' clinic using the pre constructed tools, as previously mentied. Based on patients' needs and the recent related literatures, an educational guideline was illustrated and written in Arabic-language. It was developed covering knowledge about the following topics including: Definition of colostomy, causes, types, complications and prevention of colostomy, patients' adaptation with colostomy (skin care around colostomy, changing and emptying the pouch, irrigation, diet, fluids and electrolytes, odours and gas control, constipation, diarrhea, bathing, swimming, clothing, activity, exercise, returning to the work, sexual relationships, travelling tips, social relationships, psychological relationships and religion activities. The educational media were prepared for knowledge and practices.('e.g. flanges, scissors, one-piece or two-piece colostomy bag, manual measurement, tissue paper or a clean towel, or protective skin powder, plastic gloves, and basket). The researcher design the tools of the study, including the patients' knowledge assessment questionnaire, quality of life questionnaire and the stoma self-efficacy scale tool that were filled in by the patients or by the researcher for illiterate patients, and ostomy skin observationwas done by the researcher. Filling in the tools was completed according patients' understanding and health condition.

- The researcher was available in the morning shift at the clinical field for three days / week by rotation.
- The appointment for starting educational sessions was scheduled with the patients according to their circumstances.

C. Implementation phase:

- The implementation of educational guideline was carried out at the stoma clinic for three days in theoretical and practical sessions. The patients were divided into small groups including 4 – 5 patients and repeated sessions included all patients, each group obtained 6 sessions (3 theoretical and 3 practical), each session lasted 30-45 minutes, each educational session was guided by simple written instructions, and then orientation about objectives outline and expected outcomes was done. The theoretical part was conducted through lectures and group discussions, using data show and posters as a media.
- The practical part was conducted through evaluating and monitoring the condition of peristomal skin. The researcher demonstrated changing a colostomy appliance and skin care for each patient using real materials and posters. The researcher offered the booklet for every patient and showed a video for demonstration and re-demonstration.

- Patients were allowed to ask questions in case of misunderstanding, while listening and expressing interest. The researcher measured the quality of life using Stoma-QOL scale before, immediately after, and one month later after implementation of the educational guideline. The researcher using SCSE, for caring of stoma before, immediately after and one month later after implementation of the educational guideline.
- At the end of these sessions the researcher emphasized to the participants the importance of the follow up visits.

D. Evaluation phase:

At the end of the educational guideline implementation evaluation was done to assess its effectiveness for patients with colostomy on their quality of life and self-efficacy by using the same data collection tools, and comparing the results of the data collected before, immediately after, and one month after, the implementation of the educational guideline.

Administrative Design:

An official letter was issued from the dean of the Faculty of Nursing, Ain Shams University, to the director of the Ain Shams University Hospital, explaining the purpose of the study to obtain the permission to conduct this study.

Statistical Design:

The collected data were revised, coded, tabulated and statistically analyzed by using number and percentage distribution. Chi-square test, mean and standard deviation were used to estimate the statistical significance difference between variables of the study.

3. RESULTS

Table (1) shows the socio-demographic characteristics and clinical data of the studied patients. their mean age were 42.67 ± 8.3 for adults and 15.82 ± 2.03 for adolescents. Regarding to gender, more than half of the patients (53.3 % & 51.1 %) were males in adults and adolescents respectively. Concerning the marital status, the majority of the adults (82.2 %) and less than quarter of the adolescents (22.2%) were married. considering the educational level of patients, slightly more than one third of them and one third of them (35.5 and 33.3%) respectively were illiterate, equally 31.1% could read and write in both studied groups. As well, less than half of the patients (adult & adolescents) were not working and housewives (44.4 % and 48.8 %, and 46.7% & 40% respectively). As regards the patients' medical history, more than two third of the studied patients (71.2 and 73.3%) had permanent colostomy. As for the duration of colostomy for adults and adolescents (72.2% and 64.4% respectively) had colostomy for one year or more. Around two third of the studied patients 60 % & 66.6 % of adults and adolescents respectively had no medical problems.

Table (2) Regarding the patients' knowledge related to colostomy and its care before, immediately , after and one month later of implementation of the educational guideline, this table shows that there were highly statistical significant differences between patients' knowledge before and post the educational guideline for both study groups (adults & adolescents) , concerning knowledge about colostomy (definition and its types), stoma and skin care, food and control of stool odour, social relations, sports activities and complications, and a total knowledge (P- value <0.001). Concerning the post and follow-up results there were statistically significant differences between patients' knowledge in all items ($p < 0.05$) except colostomy definition and types for both study groups (adults & adolescents), where the difference was insignificant ($p < 0.05$).

Table (3) Concerning the quality of life for patients with colostomy before and post implementation of the educational guidelines, this table shows that there were highly statistically significant differences regarding all domains of quality of life (physical, psychological, social & spiritual wellbeing in both studied groups (adults & adolescents) with total QOL scores at (P- value <0.001). Regarding the quality of life for patients with colostomy immediately post and at follow-up one month after the implementation of the educational guideline, the same table reveals that there were no statistically significant differences between them, regarding all domains of quality of life as well with total (P -value 0.292 & 0.157) in both studied groups respectively.

Table (4) Regarding the self-efficacy related to patients with stoma before and post implementation of the educational guideline, this table shows that there were highly statistically significant differences regarding physical activity, psychological activity, social activity, colostomy care, and preventing complications, in both studied groups (adults &

adolescents) with total score (P value <0.001). As regards the self-efficacy related to patients with stoma at immediately post and at follow-up after one-month implementation of the educational guideline the same table shows that there were statistically significant differences regarding physical activity , psychological activity and preventing complications (P-values = 0.033, 0.042, & 0.044respectively) in adults . However, there were statistically significant differences regarding physical activity and psychological activity (p- values= 0.017& 0.006) in adolescents, with total score in both groups =p 0.141 and 0.163respectively.

Table (5) Regarding the relation between duration of colostomy and satisfactory level of knowledge related to colostomy care at follow-up post implementation of the educational guidelines, this table shows that, there was a statistically significant difference between them regarding knowledge about colostomy (p- value 0.028). however, there were no statistically significant differences between them regarding knowledge about complications, stoma and skin care, food and control of stool odour, social relations and sport activities (P- values = 0.837, 0.149, 0.368, 0.973 & 0.670 respectively).

Table (6) Displays the correlation between patients' level of knowledge and quality of life domains post implementation of the educational guideline, this table shows that there were highly statistically significant differences regarding all domains of quality of life (P values <0.001).

Figure (1) Illustrates the total scores of peristomal skin condition pre, post and at follow-up one month after the implementation of the educational guideline, this figure shows that there were highly statistically significant differences between scores of pre, post and follow-up after the implementation of the educational guideline (P- value <0.001).

Table 1: Number and Percentage Distribution of the Socio-demographic Characteristics and Clinical Data of the Studied Patients (n=90).

Items	Adult		Adolescent	
	No	%	No	%
Gender				
<input type="checkbox"/> Male	24	53.3	23	51.1
<input type="checkbox"/> Female	21	46.7	22	48.8
Age				
14 - 18	0	0	45	100
>18 - >30	18	40	0	0
>30- <40	15	33.3	0	0
≥40	12	26.7	0	0
Mean± SD	42.67±8.3		15.82±2.03	
Marital status				
Married	37	82.2	10	22.2
Not married	8	17.8	35	77.8
Educational level				
Illiterate	16	35.5	15	33.3
Read /writes	14	31.1	14	31.1
School level	9	20	10	22.2
University	6	13.4	6	13.4
Occupation				
Working	4	8.9	5	11.1
Not working	20	44.4	22	48.8
Housewife	21	46.7	18	40.00
Type of colostomy				
Temporary	13	28.9	12	26.7
Permanent	32	71.2	33	73.3
Duration of colostomy				
Less than one year	17	37.8	16	35.6
one year or more	28	72.2	29	64.4
Medical problems				
Hypertension	7	15.5	0	0
Diabetes mellitus	6	13.4	5	11.11
Heart disease	3	6.7	0	0
Others	2	4.4	10	22.22
None	27	60	30	66.66

International Journal of Novel Research in Healthcare and Nursing

Vol. 5, Issue 1, pp: (106-121), Month: January - April 2018, Available at: www.noveltyjournals.com

Table 2: Comparison Between Patients' Knowledge Related to colostomy and its Care Before, Immediately, After and one month later of implementation the educational guidelines (n=90).

Knowledge items	Adult						Pre & Post	Post & follow	Adolescence						Pre & Post	Post & follow up
	Pre		Post		Follow-up				Pre		Post		Follow-up			
	No	%	No	%	No	%			No	%	No	%	No	%		
Colostomy definition and types	2	4.4	45	100.0	44	97.8	<0.001**	0.315	3	6.7	43	95.6	41	91.1	<0.001**	0.398
Stoma and skin care	0	0.0	45	100.0	35	77.8	<0.001**	<0.001**	2	4.4	40	88.9	32	71.1	<0.001**	0.035*
Food and control of stool odour	1	2.2	45	100.0	31	68.9	<0.001**	<0.001**	4	8.9	41	91.1	30	66.7	<0.001**	0.004*
Social relations	0	0.0	45	100.0	38	84.4	<0.001**	0.006*	5	11.1	42	93.3	35	77.8	<0.001**	0.036*
Sports activities	0	0.0	45	100.0	32	71.1	<0.001**	<0.001**	2	4.4	39	86.7	30	66.7	<0.001**	0.025*
Complications	0	0.0	40	88.9	25	55.6	<0.001**	<0.001**	3	6.7	38	84.4	27	60.0	<0.001**	0.010*
Total knowledge	1	2.2	43	95.6	33	73.3	<0.001**	0.004*	4	8.9	40	88.9	31	68.9	<0.001**	0.020*

** $P \leq 0.001$ Highly significant * $P \leq 0.05$ significant ** $P \leq 0.001$ Highly significant $P > 0.05$ Not Significant

Table 3: Quality of Life for Patients with Colostomy Before, Immediately, after and One Month of Implementation the Educational Guidelines Related to Colostomy (n=90).

Quality of life items	Adult						Pre & Post	Post & follow up	Adolescence						Pre & Post	Post & follow
	Pre		Post		Follow-up				Pre		Post		Follow-up			
	No	%	No	%	No	%			No	%	No	%	No	%		
- Physical well-being	10	22.2	44	97.8	40	88.9	<0.001**	0.091	12	26.7	40	88.9	38	84.4	<0.001**	0.535
-Psychological well-being	8	17.8	42	93.3	37	82.2	<0.001**	0.108	10	22.2	39	86.7	35	77.8	<0.001**	0.270
-Social well-being	12	26.7	44	97.8	40	88.9	<0.001**	0.091	14	31.1	41	91.1	36	80.0	<0.001**	0.134
-Spiritual well-being	8	17.8	39	86.7	37	82.2	<0.001**	0.561	13	28.9	38	84.4	34	75.6	<0.001**	0.292
Total QOL scores	9	20.0	42	93.3	39	86.7	<0.001**	0.292	11	24.4	40	88.9	35	77.8	<0.001**	0.157

* $P \leq 0.05$ Significant ** $P < 0.001$ Highly Significant $P > 0.05$ Not Significant

Table 4: Self-Efficacy Related to Patients with Stoma Before, Immediately, After One Month of Implementation the Educational Guideline (n=90).

Self-efficacy items	Adult						Pre & Post	Post & follow up	Adolescent						Pre & Post	Post & follow
	Pre		Post		Follow-up				Pre		Post		Follow-up			
	No	%	No	%	No	%			No	%	No	%	No	%		
Physical activity	1	2.2	14	31.1	24	53.3	<0.001**	0.033*	2	4.4	12	26.7	23	51.1	<0.001**	0.017*
Psychological activity	2	4.4	19	42.2	10	22.2	<0.001**	0.042*	4	8.9	20	44.4	8	17.8	<0.001**	0.006*
Social activity	1	2.2	42	93.3	39	86.7	<0.001**	0.292	3	6.7	40	88.9	37	82.2	<0.001**	0.368
Colostomy care	1	2.2	41	91.1	44	97.8	<0.001**	0.167	5	11.1	42	93.3	40	88.9	<0.001**	0.459
Preventing complications	2	4.4	37	82.2	43	95.6	<0.001**	0.044*	4	8.9	36	80.0	41	91.1	<0.001**	0.134
Total scores	1	2.2	31	68.9	37	82.2	<0.001**	0.141	6	13.3	29	64.4	35	77.8	<0.001**	0.163

* $P \leq 0.05$ significant ** $P \leq 0.001$ Highly significant $P > 0.05$ Not significant

Table 5: Relation Between Duration of Colostomy and Satisfactory Level of Knowledge Related to Colostomy Care Immediately after and One Month later of Implementation the Educational Guideline (n=90)

Variables	Duration of colostomy				χ^2 value	P value
	Less than one year (n=35)		More than one year (n=55)			
	No.	%	No.	%		
Colostomy	35	100	48	87.3	4.830	0.028*
Complications	28	80	43	78.2	0.042	0.837
Stoma and skin care	31	88.6	42	76.4	2.081	0.149
Food and control of stool odour	23	65.7	41	74.5	0.812	0.368
Social relations	30	85.7	47	85.5	0.001	0.973
Sport activities	26	74.3	43	76.4	0.181	0.670

* $P \leq 0.05$ significant ** $P \leq 0.001$ Highly significant $P > 0.05$ Not Significant

Table 6: Correlation Between Patients' Knowledge and Quality of life Domains Immediately Post Implementation of the Educational Guideline (n=90)

Variables	Total knowledge				x ² value	P-value
	Unsatisfactory		Satisfactory			
	No	%	No	%		
Quality of life domains						
Physical well-being	0	0.0	86	95.6	66.724	<0.001**
Psychological well-being	1	1.1	81	90.0	33.056	<0.001**
Social well-being	0	0.0	79	87.8	14.690	<0.001**
Spiritual well-being	0	0.0	72	80.0	55.385	<0.001**

** P < 0.001 Highly Significant

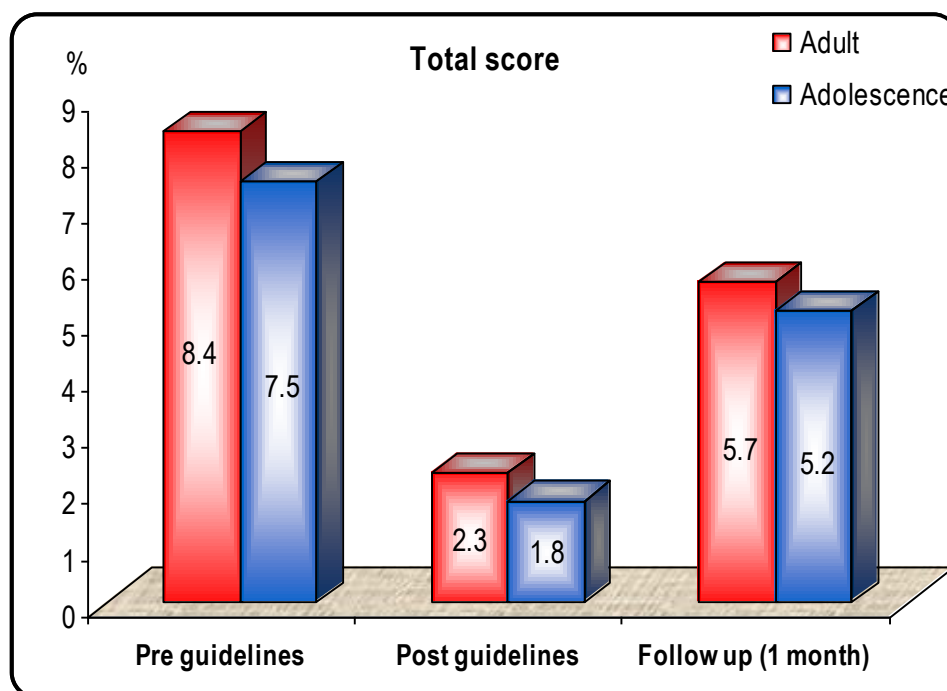


Figure (1): Total Scores of Peristomal Skin Condition After Implementation of the Guideline.

4. DISCUSSION

This study was carried out to assess the effect of educational guideline on quality of life and self-efficacy for adolescent and adult patients with colostomy. Patient education may help to increase patients' knowledge about their health, their condition and their self-care possibilities. Few studies have explored the issue of the effect of patient education on health related quality of life, and only in single-group studies. Moreover, a recent systematic review examining the effect of education on patients with stoma concluded that there was a need for testing the effect in a more controlled design (Perston, 2011).

The results of present study revealed that less than half of the study sample of adolescents was between 14-<18 years; this result was incongruent with those of Nicholas, et al. , (2008), who reported in their study about struggles, strengths, and strategies: an ethnographic study exploring the experiences of adolescents living with an ostomy and that , the mean age of participants was 15.3 years, and participants ranged from 14 to 18 years of age. However, the previous results that of contradict with Mohamed (2011) whose study' entitled (Design and Validation of Educational Tool for Assessment Needs of Patients with Stoma), reported that colostomy occurred at the age of over sixty years; therefore, colostomy therapy should be targeted on older patients who require more physical and mental support in adjusting to life with a stoma.

Concerning gender, the result of this study revealed that more than half of the patients were males. This could be explained in light of the known fact that the majority of males in Egypt are smokers, in this respect, **Wiggers and Wereldsma (2009)** whose study entitled "Association Between Age and Local Recurrence of Rectal Cancer" it revealed that smoking increases the risk of colorectal cancer. This result was in agreement with that of **Pak (2008)** who studied colostomy in children: Indications and common problems in Benin City, Nigeria and found that there were 46 children aged two days and 15 years with male/female ratio 2.8:1. As well the finding is also consistent with that of **Berry (2013)** study on "Return to Work Experience of People with Cancer" which revealed that men have a higher incidence of cancer of the rectum and women have a higher incidence of cancer of the colon. The present study revealed that rural inhabitants represented about two thirds of the sample and the farmers occupy the highest percentage of the study sample respectively one third.

Regarding the marital status, the majority of the adults patients in present study were married. This result was supported by **ArunKadam, and Shinde (2014)** whose study on the "Effectiveness of Structured Education on Caregiver's Knowledge and Attitude Regarding Colostomy Care" revealed that the majority of respondents who participated in their study were married. which means that the disease will increase the needs and stress on the patients because they had many responsibilities toward their spouses and children, so the disease will affect their family, therefore, further study should be designed to investigate the role of the family.

In a study about quality of life in ostomy patients: A qualitative study carried out by **Dabirian, et al., (2011)** mentioned that the 14 participants in this study comprised six females and eight males, aged 14–57 years, with varying employment status, i.e., employee, student, or self-employed. All participants, except for two, were married. This may be due to that people living with a stoma experienced feelings of embarrassment and frustration so, they prefer to be away from others.

Regarding the educational level of the studied patients, around one third of patients in both groups (adults and adolescents) were illiterate and less than one third of patients could read and write, and almost one third of patients were educated. This result was in accordance with **Mohamed (2011)** whose revealed that the majority of the colostomy patients were or just could read and write. The same result was contradicted with **Kadam and Shinde (2014)** who revealed that all the respondents in their study expressed that they were educated.

The result of this study revealed that the highest percentages of the study patients (adults and adolescents) were not representing less than half each working or housewives. This result was in accordance with that of **Wehida, Ibrahim and Abd El-fatah (2015)** which reported that, the employment status, that thirty percent of their study sample became unemployed, as they were working in their own private work before being diseased and diagnosed as having colorectal cancer, and because of the disease process they were compelled to leave their responsibility to their sons so, they lost their jobs. This finding of the current study may be due to the frequent need for follow up subsequently sick leave or feeling uncomfortable with the colostomy bag due to fear of its leakage so most of patients can not working. The same result contradicted with **Shaffy (2012)** who study 'Physical, nutritional and sexual problems experienced by the patients with colostomy/ileostomy: 'reported that more than half of the samples were working.

In the current study, regarding patients' medical history, less than three quarter of the studied patients (adults and adolescents) had permanent colostomy. This result may be owing to the cause of the colostomy as the majority of them needed colostomy after excision of cancer colon or rectum. Regarding the duration of colostomy, two thirds of both groups have colostomy for one year or more. These results are contradiating with the study about colostomy in children: indications and common problems carried out in **Benin City, Nigeria, Osifo, et al, (2008)** clarified that all the children in their study had temporary colostomy. This is because the indications were correctable lesions, which allowed closure of the colostomy after definitive surgery.

Concerning medical problems, this study results showed that three fifth and two third of the patients (adults and adolescents) had no medical problems. This result was in accordance with that of **Mohamed (2011)**, whose study results revealed that the majority of the patients have no chronic disease. The study performed by **Werth, Schuttle, and Stommel (2014)**, also support the current study findings as it revealed that patients who did not have chronic diseases were higher compared to ones with chronic diseases and this difference was statistically significant ($p < 0.05$), in a study entitled "Perceived Educational Needs in the Inpatient to Home Care Setting for the Person with a New Stoma".

Considering total patients' knowledge about colostomy and its care, the results of this study showed that most of patients had satisfactory level of knowledge immediately post and one month later of implementing the educational guideline compared to pretest of the training course. This may be attributed to satisfactory knowledge about disease that was delivered as a holistic and comprehensive session of care to persons with stoma surgery and revealed to be the important to them to attend an educational and informational meetings and courses. This finding was in accordance with those of *Hegazy et al.,(2014)* who mentioned in their study about "Outcomes of Educational Guidelines on Awareness and Self Efficacy Among Patients with Permanent Colostomy" that, patients' knowledge about colostomy care significantly improved post the education compared to pre education. Patients with a colostomy must acquire knowledge such as wearing In similar studies, *Doughtily and Jackson (2011)* and *Kim, Kim, and yu (2012)* in their study about "*Gastro intestinal disorders*" mentioned that the importance of teaching basic stoma pouching principles to enhance the client's sense of control over the situation.

In the same line *Hussein (2008)* reported in a study "*Effect of Discharge Planning for Patients with Stoma on Life Style*" that there was a highly statistically significant difference between pre and post-test knowledge score of the patients, indicating the improvement of patients' knowledge after discharge planning about ostomy management including (information about stoma, care of ostomy, diet related to ostomy, social relationship and complications of ostomy. On the other hand, the findings of *Gaber and El-Gamil (2012)* who studied "*the Quality of Life for Patients with Colostomy after Surgery*" were not in accordance with the present study results, as it revealed that the patients' colostomy knowledge was only in the following areas: definition of colostomy, types of pouch and causes of colostomy, which reflected the low level of knowledge among patients with colostomy after education. *Lo et al.,(2011) and Cheng et al. ,(2013)* in their study "Multimedia Education Program for Patients with a Stoma: Effectiveness Evaluation" stated that the stoma knowledge scores of individuals increased upon the training and this finding supported the current study.

In the present study, there were improvements in patients' quality of life at post and follow-up one month later after the implementation of educational guideline, regarding the physical, psychological, social and spiritual well-being. This may be due to that the researcher provides sufficient knowledge regarding dietary guidelines and reinforced patients with colostomy knowledge seeking to identify, in the day-to-day practices of ostomy care, changes in quality of life, self-esteem, self-image, well-being and sexuality to deal with. In this respect. The Cleveland Clinic, in Florida, conducted a research to determine the actual impact of the stoma function on the quality of life. They assessed 70 patients using the "stoma scoring system" they have developed. Data revealed that there was a positive relationship between stoma function and the quality of life; i.e., when the stoma functions well, they have a better quality of life as highlighted by *Boarini(2010)*.

As well, the previous finding is supported by *Deshpande(2015)* who conducted a study entitled "Effectiveness of Planned Nursing Intervention an Knowledge and Practice of Selected Aspects of Care Provided by Caregiver of Children with Colostomy Admitted in Hospitals of Mumbai "and reported that, nurses who provide pre and immediate post operative education and follow up can help in adjustment, reduce complications and improve overall quality of life of children with intestinal stomas.

Similarly *Costa et al., (2014)* in their study about assessing the body image and subjective wellbeing of patients with stomatitis living in Brazil, concluded that,. the ostomy signifies a change in lifestyle; and that the nursing care, through educational activities, is indispensable to the development of self-care and for the adaptation of people, with ostomies with consequent improvement in their quality of life.

Concerning the total self-efficacy of patients with stoma pre, post and follow-up one month later after the implementation of the educational guidelines, the results of this study showed that there were highly statistically significant differences between both pre and post, and between post and follow-up after the implementation of the educational guidelines. This result may be due to the availability of needed information regarding stoma care and the prevention of complications in the Arabic-language booklet offered to participants which increased their self confidence to care. This finding was in agreement with those of *Hegazyetal.(2014)* in their study on "on awareness and self efficacy among patients with permanent colostomy "after implementation an educational guideline they 'mentioned that stoma care self-efficacy results revealed significant improvement in post and follow-up assessment after patient education.

Otherwise *Culha (2016)* stated that, self-care agency scores increased in both intervention and control groups 3 weeks later and the increasing extent in the intervention group was higher than the control group($p<0.001$), in study about the effectiveness of self-care education on patients with stomas. As well, the previous finding is in accordance with that of

Hu, Zhang and Zhang(2010) who found in their study about "The Status and Related Factors of Adjustment in Colostomy Patients." that patients who master self-care skills make better social adjustments and also observed that ability to self-care was correlated positively with level of psychosocial adjustment. In a similar study **Cheng, et al.,(2013)** who studied "The Correlation Between Ostomy Knowledge and Self-Care Ability with Psychosocial Adjustment in Chinese Patients with a Permanent Colostomy "and reported that strong evidence was found for the important role of self-efficacy in the process of adapting to a stoma. They identified that stronger feelings of self-efficacy shortly after the operation predict fewer psychosocial problems in the course of the first postoperative year.

Regarding the relation between the duration of colostomy and patients' knowledge related to colostomy care, there was a statistically significant relation between them. Moreover, the patients who had colostomy one year or more had more knowledge about colostomy care than patients who had colostomy for less than one year. This could be due to frequent follow-up visits to the hospital and patient always wants to feel of satisfied about his/her condition. This result agrees with those of **Savard and Woodgate (2014)** in longitudinal study about young peoples' experience of living with ulcerative colitis and an ostomy and found that stoma patients who had initially reported strong feelings of disgust/shame, inability to handle their stoma bag and poor physical/ emotional well-being, improved their scores three months to a year later, resulting in improved QOL.

Regarding the relation between patients' age and quality of life, the present study results revealed that, there was a significant difference between younger and elderly patients regarding physical activity and psychological activity. This may be due to the fact that; the older patients might adapt to stoma creation very well. In **Wonget al.,(2013)**; study " Descriptive Survey Study on the Effect of Age on Quality of Life Following Stoma Surgery Ostomy Wound Management" they concluded that older patients, on average, had higher scores for quality of life ($p = 0.56$) similarly, **Bryan and Dukes(2010)** in their study related to enhanced recovery program for stoma patients stated that, age was reported as an important factor related to improving QOL. It added that older patients were able to reach their maximum QOL by six months, whereas younger patients had improved QOL at approximately 12 months post ostomy surgery.

Concerning the relation between patients' levels of education and their quality of life, there were statistically significant differences between patients with different educational levels regarding physical well-being, psychological well-being, social well-being and spiritual well-being. This could be attributed to the idea that well-educated individuals perceived their health better. According to the current study results, when the self-care agency and QOL scores of the patients in the study group were examined, even though the self-care agency scores of the patients who graduated from university were higher than others, there was no significant difference ($p > 0.05$). In congruence with the present study results, **Mata, et al., (2013)** detected that as the education level increased, the self-care agency also increased. These results were also supported by **Gaber (2014)**, who stated that there was a highly statistically significant relation between patients' total quality of life level and their level of education.

As regards the relation between patients' levels of education and peristomal skin condition in the present study, there was a significant relation between them, related to the size of the affected area. This result may be due to the fact that educated patients gained more knowledge after the educational guideline about care of peristomal skin condition, so they could prevent complications. Knowledge and understanding of predictors of complications can facilitate the identification of educational needs and organization of stoma care. Moreover, **Bryan and Dukes(2016)** found in study about the enhanced recovery program for stoma patients with stoma that the algorithm enabled practitioners to assess the nature of the ostomy complications and determine the type of treatment needed to manage peristomal skin disorders and stoma complications without physician assistance.

Regarding the relation between colostomy level of knowledge and peristomal skin condition in the present study, there was a significant relation between them regarding skin discoloration, area of erosion and tissue overgrowth. This finding may be due to the patients' satisfactory level of knowledge regarding stoma care after the implementation of the educational guideline, which had been applied on care of their colostomies. So, peristomal skin condition had been improved. In similar study **Jemec, Martins and Classeus, (2014)** assessed peristomal skin changes in ostomy patients: validation of the ostomy skin tool and evaluated the inter- and intra nurse assessment variability of the ostomy skin tool and found the tool to be a reliable and accurate instrument that provides common language to describe the extent of severity and possible cause of peristomal skin disorders.

Concerning the correlation between patients' knowledge and quality of life domains in the current study, there was a significant relation between them, regarding physical, psychological, social and spiritual well-being. This result may be due to that patients' knowledge improvement regarding stoma management reflected on the quality of life after the educational guideline in accordance *Anaraki et al., (2012)* stated in their study about "Effectiveness of Structured Education on Caregiver's Knowledge and Attitude Regarding Colostomy Care" as regards the quality of life outcomes in patients living with stoma, the findings demonstrated that living with stoma influences the overall aspect of QOL. Education for the patients and their families is important for improving QOL of patients with stoma. In the same context *Eder, Lodyga and Lykowska (2013)* reported that, there is a need for continuous improvement of knowledge and exchange of experience for patient by the nursing staff working in multidisciplinary teams involved in the care for children with stoma. This finding was in agreement with that of *Gaber and El-Gamil, (2012)*, who mention in study about 'Quality of life for patients with colostomy after surgery' that the patient's knowledge related to the definition of colostomy and complications of mucus membrane of stoma had a significant relation with the majority of quality of life domains. It means that when the patients' knowledge increased about stoma, it had its effects on the patients' psychological, physical and social well-being and their satisfaction; it might be related to the patients' more understanding of their condition.

The same result contradicted with *Gaber(2014)* who added that, the majority of the study subjects had bowel problems, discomfort and sleep problems, psychological problems e.g., depression and low self-esteem, sexual problems, skin problems due to the presence of stoma and pouch. Nearly three quarters of the studied subjects had a low level of quality of life. Earlier *Ann Surg Oncol (2011)* who found in cross-sectional studies about impact of a temporary stoma on the quality of life of rectal cancer patients undergoing treatment identified that satisfied information including the underlying reasons for an ostomy, presence and severity of ostomy complications, presence and severity of comorbid conditions, sexual function, age, and ability to pay for ostomy supplies influence health-related QOL.

Furthermore *Savard and Woodgate(2009)* who studied young peoples' experience of living with ulcerative colitis and an ostomy, mentioned that, children with an intestinal stoma require supports which are defined as interpersonal transformations, involving the combination of affection, social integration, exchange of mutuality, a secure sense of alliance and the meaning of guidance attainment. *Costa et al., (2014)* identified that, when receiving this support, the patient succeeds in his/her self-care, which, in turn, has an effect on quality of life and self-esteem

5. CONCLUSION

On the light of current study results, it can be concluded that, implementation of the educational guideline has a positive effect on enhancing all aspects of the quality of life domains (physical, psychological, social and spiritual well-being), and all aspects of self-efficacy (physical activity, psychological activity, social activity, colostomy care and preventing complications) for both adults and adolescence among patients with colostomy. These findings justified the research hypothesis.

6. RECOMMENDATIONS

- Providing knowledge and emphasizing/teaching self-care before hospital discharge may optimize quality of life for persons with a colostomy.
- In-service educational programs and job training to upgrade nurse's knowledge, attitudes and practices toward providing essential components of nursing process "assessment, planning, implementation and evaluation" for provision of care.
- Follow up care for patients with colostomy through clinical visits and phone calls that would help to find out colostomy patients' problems and solve them.
- Educational guidelines for patients with colostomy should be applied to improve patients' condition, quality of life and stoma self-efficacy, and there is need for a simplified illustrated and comprehensive Arabic – language booklet to be used as reference.
- Further study with replication of the current study on a larger probability sample is recommended to achieve generalization of the results and wider utilization of the designed educational guideline.

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