

# Urinary Stoma Care Guidelines: The Effect on Patients' Self-efficacy and Incidence of Peristomal Complications After Permanent Urostomy

Naglaa Elsayed Mahdy<sup>1</sup> Dalia Ali Ameen<sup>2\*</sup> Waleed Elsayed Mousa<sup>3</sup>

1.Assist. Professor of Medical Surgical Nursing, Faculty of Nursing. Ain shams university .Egypt

2.Lecturer of Medical Surgical Nursing, Faculty of Nursing. Ain shams university. Egypt

3.Lecturer of Urology, Faculty of medicine. Ain Shams University .Egypt

## Abstract

**Background:** Adaptation to the urinary stoma is difficult and need a collaboration of multi-disciplinary team including nurse ,urological physician and surgeon who may be in a powerful position to positively help such patients to enhance thier self-efficacy, adapt to life with a stoma care and minimizing the associated complications. **Aim:** This study aimed to evaluate the effect of urinary stoma care guidelines on patients' self-efficacy and peristomal complications after permanent urostomy. **Design:** A quasi experimental design. **Setting:** The study was conducted at urosurgery department and outpatient urosurgery clinics at Ain shames universty hospitals,Cairo, Egypt.. **Sample:** A purposive sample included 50 adult patients after permanent urostomy and was divided randomly into 25 patients in the study group and 25 patients in the control group. **Tools of data collection :**I-Patient's structured interview questionnaire, **II**-Patient's stoma care practice observational checklist, **III**- Pittman Ostomy Complications Severity Index (OCSI), **IV**-Ostomy complications risk factors assessment tool, **V**- Stoma Care Self-Efficacy Scale. **Results:** Regarding self-efficacy, 68.0% of the study group and 72.0% of the control group weren't confident pre- guidelines implementation. While, 3 months follow-up, 60.0% of the study group were fairly confident in contrast to 60.0% of the control group weren't confident with statistically significant difference. Concerning peristomal complications, leakage, peristomal dermatitis, stomal pain and stomal bleeding were the most common with statistically significant difference between the two groups 3 months follow up.**Conclusions:** Urinary stoma care guidelines affected positively on enhancing patients' self-efficacy and minimizing peristomal complications. **Recommendations:** furthur researches should be done to assess the risk factors for ostomy patient as predictors for peristomal complications occurrence after urostomy and subsequently an early management and preventable measures can be utilized as well as the role of wound ostomy nurse (WON) should be identified and activated in egypt through the Egyptian Nursing Syndicate as they play avital role in caring for ostomy patients.

**Keywords:** Peristomal complications, permanent urostomy, Self-efficacy, urinary stoma care guidelines

## 1. Introduction

Urinary diversion is a major surgery and life threatening event which involves providing an alternate path for urine to exit to the body other than the normal ureter, bladder, urethra route. This can be accomplished by creating a pouch for collecting urine that then exits through a stoma, or by diverting the ureters to a stoma and allowing urine to free-flow through an opening in the abdomen (*Colwell & Carmel, 2012*).

There are four major reasons is for having a urinary diversion: Bladder cancer (this is the most common reason), neurologic dysfunction of the bladder, birth defects and chronic inflammation of the bladder. After urostomy surgery, patient will no longer have voluntary control over urination. Urine will pass through stoma, the opening on abdomen, and empty into a pouch. Common types of urinary diversions, classified into three categories noncontinent urinary diversions, continent cutaneous urinary diversions, and orthotopic ileal (*McGee & Cataldo, 2016 ; Porrett & Anthony, 2013*).

Despite advancements in the creation and care of stomas, ostomy and peristomal skin complications are common immediately following surgery as well as in the months and years thereafter. Peristomal skin problems are the of most commonly experienced physical complications following ostomy surgery. The majority of patients with a stoma had experienced appliance leakage. Stoma appliances can leak for a number of reasons, such as being overfull. Leaking may make it difficult to the patient to live a normal life and may cause skin problems (*Carlsson , Fingren , Hallén , Petersén & Lindholm, 2016*).

Peristomal skin complications can cause a wide range of signs and symptoms, from skin discoloration to polyp-like growths, from erythema to full-thickness wounds. They can lead to discomfort, pain, poor self-image, social isolation, and impaired quality of life, not to mention additional care costs (*Jordan & Christian, 2013*).

Sore peristomal skin is one of the most common problems reported by patients with a stoma. Symptoms can include red but intact skin (erythema). As problems worsen, the skin can become broken, oozing, or ulcerated. A common cause is the stomal output coming into contact with peristomal skin. Sore skin can occur as a result of the aperture in the stoma flange being the wrong size. If it is too small, the flange tries to stick onto the “wet”

stoma, which leads to a leaking appliance; if it is too large, urine can rest on the abdominal skin, causing the skin to break down. These problems can be resolved by remeasuring the stoma and re-educating the patient on creating an appropriately sized aperture (*Kauffman & Lee, 2014 ; Konety, Allareddy & Herr, 2013*).

A retracted stoma is one that is pulled into the abdomen instead of being minimally raised above the level of the skin (for a colostomy) or having no spout (for an ileostomy or urostomy). A retracted stoma can lead to urine collecting to under the flange, causing sore skin and possible leakage (*Bafford & Irani, 2013*). A prolapsed stoma can be described as the stoma becoming longer, sometimes by six inches (15cm) or more. This can cause a number of problems, such as reducing the capacity of the appliance to collect the urine; in such cases a larger appliance can be used (*Vasdev, Moon & Thorpe, 2013*).

Stomal Necrosis is defined as the death of stomal tissue resulting from impaired blood flow. It typically occurs within 24 hours of the ostomy surgery. The stoma appears dusky to black and soft, flabby when palpated. Common causes include excessive tension on the mesentery, constricting sutures (too narrowly placed or too tight), pressure caused by too tight bag appliance. Depending on the extent of the vascular compromise, surgical revision may be needed. A discoloured stoma requires urgent review and may also need surgery (*Degener, Roth, Mathers & Ubrig, 2014 ; Rolstad, 2012*).

Approaches to teaching ostomates should begin preoperatively and continue postoperatively in the hospital setting and need a multidisciplinary team (MDT), requiring joint consultation or group discussion at any time based on patients' needs. The attending physician, nursing staff, and when available, an ostomy nurse are involved with this teaching (*SF, Wang, LY, MY, Chang & Hayter, 2011*).

The mainstay of stoma education traditionally occurs in the postoperative period; however, emerging evidence suggests that preoperative stoma education may be equally important. Several factors may hinder postoperative stoma education. Pain, medications, and psychological stress may diminish educational effectiveness in the early postoperative period where by increasing the value of preoperative education. Periodic stoma assessment and educational reinforcement should continue following discharge from stoma surgery, particularly in the early postoperative period when stoma-related complications are most frequent. With regular ostomy nurse follow-up, the prevalence of peristomal skin complications in this population was low (*Jemec, Martins, & Claessens, 2013*).

Urinary stoma care guidelines intervention is an effective way forward to optimize urinary stoma self-care as an element in a multidisciplinary pathway. Stoma education has a role in further endeavours to improve the patient pathway and is optimize outcome (*Jensen, Kiesbye, Soendergaard, Jensen & Kristensen, 2017*). Nurses have a great role in helping those patients to enhance patients' self-efficacy and adapt to life with a stoma for minimizing the complications to attain better quality of life and adjust psychologically and physically to the permanent changes in body images, function and appearance (*Artibani, 2014*).

The nurse plays an important part in the preoperative and postoperative management of the patient with a permanent urostomy. The Patients undergoing stoma formation require specialist nursing care to support both their physical and psychological needs (*Stewart & Anna 2013 ; Tal, et al., 2012*). Preoperative nursing care is the preparation and management of a patient prior to surgery. It includes both physical and psychological preparation. Additionally, preoperative teaching includes instruction through the preoperative period, the surgery itself, and the postoperative period's instruction. knowledge about what to expect during the postoperative period is one of the best ways to improve the patients outcome. (*Lawrentschuk, Ong, Herdman & Johnson, 2013 ; Bjerre, Johansen & Steven, 2012*).

A major postoperative objective is to assist the patient to achieve the highest level of independence and self-care possible. Instruction about expected activities may alleviate most of fears and help with post operative adaptation, can also increase compliance and help prevent or reduce post operative complications or problems such as leakage, skin irritation, pain, and hernia, laceration, necrosis, prolapse, retraction, and stenosis. The primary is nurse work closely with the patient and family to instruct and assist them in all phases of managing the ostomy. Adequate supplies and complete instruction are necessary to enable the patient and a family member to develop competence and confidence in their skills (*Jemec, Martins & Claessens, 2013*)

Nurses should assess the problems before starting any treatment; this should include assessing symptoms and observing the stoma and the peristomal (surrounding) skin. Nurses should also review how long the problem has existed and any previous treatments. If problems do not resolve quickly or further advice is needed, practitioners should contact a stoma specialist nurse. Moreover, With regular for WOC nurse follow-up, the prevalence of peristomal skin complications will be low (*Burch, 2011*)

Patient's education has an important part in development of self-care agency, independence and adaptation of the individuals to the diseases. By the way, self-care is an important part for the adaptation of patients with stomas after surgery so that planned self-care education should be given to patients before their discharge (*Culha, Kosgeroglu & Bolluk, 2016*).

Educational nursing guidelines is the method of assisting patients to resume self care. Also, when patients were encouraged to participate in their own self care, knowledge increases and anxiety decreases. Guidelines can

improve the quality and consistency of care, the nurse begins teaching family members while the patient is still in the hospital. Patient and family teaching should focus on the disease, how to change the appliance, controlling odour, self care performance, clothing, activities, and importance of follow up to prevent complication (*Danielsen , Butcharth & Rosenberg, 2013; Hautmann, 2011*).

Self-efficacy (SE) represents “beliefs in one’s capabilities to organize and execute the course of action required to produce given attainments” . Improved SE can lead to successful adaptation of new behaviors, such as self-care skills (*Merandy, Morgan, Lee & Scherr, 2017 ; Bandura 1977*). Interventions targeting SE specific to this population represent a possible area of focus in overcoming the challenges related to adaptation after surgery, particularly self-care needs. Nurses can identify areas where increasing patient SE can have the greatest impact on a person’s ability to manage their symptoms and improve outcomes (*Hoffman, 2013*).

### 1.1 Significance of the study

Based on the evidence of many researches ,clinical experience and observation of the actual situation, most of the patients who had a stoma suffers from peristomal complications. These results can underscore the importance of further work on interventions to prevent and treat peristomal complications and to provide ongoing outpatient follow-up for individuals with stomas. Previous studies are lacking on multimethod educational interventions aimed at improving adaptation to life after permanent urostomy that help in improving self efficacy (SE) and urinary stoma self-care sequentially prevent peristomal complications, So there is an urgent need for a hospital-based education intervention and ongoing post discharge support and education for patients or family caregivers. Preventative measures through patients' education are important and the best way to ensure that complications are avoided with qualified and experienced health care providers for preoperative as well as postoperative care. Specially trained wound ostomy nurses(WON) may assist patients by not only treating complications of the stoma, but just as importantly, by helping the patients take good care of their stoma. The stoma care guidelines is an aspect sensitive to nursing care and contribute to reducing the incidence of complications or early identifying their presence, thus promoting a better quality of life for patients through maximizing stoma self-care skills, and systematic follow-up after clinical discharge. So, it is essential to implement nursing intervention of stoma care guidelines that can lead to better outcomes in patients with a permanent stoma post urinary diversion, as a training for self-care, surveillance, and follow-up in order to prevent and/or early detection for the presence of peristomal complications.

## 2. Subject and Methods

### 2.1 Aim of the study:

This study aimed to evaluate the effect of urinary stoma care guidelines on patients' self-efficacy and incidence of peristomal complications after permanent urostomy through the following:

- 1- Assess patients' knowledge and practice regarding urinary stoma care pre urinary stoma guidelines intervention.
- 2- Assess patients' self-efficacy regarding urinary stoma care pre urinary stoma guidelines intervention.
- 3- Implement a developed urinary stoma care guidelines for patients based on their needs assessment.
- 4- Evaluate the effectiveness of urinary stoma care guidelines on patients' self-efficacy post guidelines intervention.
- 5- Evaluate the effect of urinary stoma care guidelines on incidence of patients' peristomal complications post guidelines intervention
- 6- Identify risk factors correlated with patients' peristomal complications.

### 2.2 Research Hypothesis: The current study hypothesized that:

- 1- Patients with permanent urostomy who received urinary stoma care guidelines will have better self-efficacy than patients who did not receive stoma care guidelines.
- 2- Patients with permanent urostomy who received urinary stoma care guidelines will have less peristomal complications than patients who did not receive stoma care guidelines.

### 2.3 Operational Definition

- 1- **Urinary stoma care guidelines:** it is the basic information and self-care skills needed for patients with permanent non continent urinary diversion to manage their stoma care as changing pouching system, emptying the pouch and change the flange.
- 2- **Peristomal complications:** physiological ostomy complications which involve changes of the stoma and peri-stoma skin that were addressed in this study included leakage, peristomal irritant dermatitis, pain, bleeding, stomal necrosis, stomal stenosis, retraction, mucocutaneous separation, and hyperplasia.
- 3- **Permanent urostomy:** it is a permanent non continent urinary diversion, requires surgery to reroute urine flow to an external pouch through an opening in the wall of the abdomen, called a stoma,

**4- Incidence of peristomal complications:** Incidence is the rate of new cases of peristomal complications. It is generally reported as the number of new cases occurring within a period of time.

**2.4 Research design:** To conduct this study a quasi-experimental design was utilized to compare between both groups (study and control) regarding the effect of urinary stoma care guidelines on patients' self-efficacy and incidence of peristomal complications post urinary stoma guidelines intervention.

**2.5 Setting:** The study was conducted at urosurgery department and outpatient urosurgery clinics at Ain shames universty hospitals,Cairo, Egypt.

**2.6 Subjects:** A purposive sample of 50 patients from both sex after permanent urostomy post radical cystectomy due to bladder cancer was selected considering certain exclusion criteria which included patients with bladder substitutions, patients with mental disorder, patients who were exposed previously to any educational programs or guidelines and free from any medical chronic condition and no metastases occur. The study subjects were divided randomly into two groups: study group (25 patients) who received the urinary stoma care guidelines and routine care and control group (25 patients) who received only the routine care. The sample size was determined statistically by power analysis test considering Type I error with significant level  $\alpha = 95\%$ . & Type II error by power test  $\beta = 90\%$ .

### 2.7 Tools of Data Collection:

**I- A structured urinary stoma interview questionnaire:** It was developed by the researchers and was written in english language and translated into Arabic language. It was consisted of two parts: **Part I:** It was used to assess permanent urostomy patient's demographic characteristics including age, gender, level of education, marital status, income, occupation, wirt place of residence....etc) in addition to patients' body mass index and smoking. **Part II:** It was consisted of 26 questions answered by Yes or No. It was developed by the researchers based on the related literature (*National Cancer Institute, 2014 ; Pellico, 2013 ; Smith , Balar, Milowsky & Chen, 2013 ; Smeltzer& Bare, 2010*) to assess permanant urostomy patients' knowledge about urostomy (8 questions) and urinary stoma care (18 questions).

**Scoring system:** The correct answer of patients' knowledge scored by 1, while the incorrect answer scored by zero. Total score was 26 degree, and it was considered that :  $\geq 60\%$  ( $\geq 16$  grades) was satisfactory while  $< 60\%$  ( $< 16$  grades) was unsatisfactory.

**II-Patient's urinary stoma care practice observational checklist:** It was developed by the researchers based on the related literature (*Degener, Roth , Mathers & Ubrig, 2014 ; Lyon , Lebwohl, Heymann, Berth-Jones & Coulson, 2013 ; Pottage, 2012 ; Taylor, Lillis , LeMone & Lynn, 2011*) to assess permanant urostomy patients' ability to perform skills related to urinary stoma self-care practices as stoma observation and stoma care, emptying and changing pouching system. It included 3 urinary stoma self-care practices. **First:** Observing and cleaning the skin around urinary stoma (6 steps). **Second:** Evacuating the pouch from the urine (4 steps). **Third:** Change of the appliance (12 steps).

**Scoring system:** If the step was done correctly, it scored 1, while if the step wasn't done or done incorrectly it scored zero. The total score was 22 grades. It was considered that:  $\geq 60\%$  ( $\geq 13$  grades) was satisfactory, while  $< 60\%$  ( $< 13$ grades) was unsatisfactory.

### III- Pittman Ostomy Complications Severity Index (OCSI)

The OCSI is a peristomal complications assessment tool which objectively measure the incidence and severity of early ostomy complications 90 days post surgery. The OCSI consists of nine complications which are leakage, peristomal dermatitis, pain, bleeding, stomal necrosis, stenosis, retraction, mucocutaneous separation and hyperplasia. The OCSI was adopted from *Pittman,2011*. The OSCI demonstrated acceptable content validity (CVI= 0.9). Expert ratings also provided evidence of content validity for clarity, comprehensiveness and appropriateness.The OCSI demonstrated acceptable inter-rater reliability for all of the items ( $k = .71- 1.0$ ) and excellent correlation of total scores between raters ( $r=.999, p=.000$ ). Internal consistency reliability for the OCSI was supported by a Cronbach alpha of 0.86 .

**Scoring system:** The OCSI format uses four likert-like scale with individual item score for its nine items with grades ranging from 0-3. S0, the maximum total score possible is 27 and the minimum possible score is 0. The higher the score the more severe the ostomy complications. **Leakage scoring:** Mark 0= no leakage; 1= leakage that occurred approximately 1-2 times in past 30 days; 2= leakage that occurred approximately 1-2 times per week; or 3= leakage that occurred approximately 1-2 times per day. **Dermatitis scoring:** Mark 0= no peristomal irritation; 1= peristomal erythema, redness, or rash but no skin loss and skin is intact; 2= peristomal erythema, redness, or rash with loss that is less than 50% of peristoma skin; 3= peristomal erythema, redness, or rash with loss that is greater than 50% of peristoma skin. **Pain scoring** Mark 0= no stoma pain; 1= stoma pain 1, 2, or 3; 2= stoma pain 4, 5, 6; 3= stoma pain 7, 8, 9, or 10. **Bleeding scoring:** Mark 0= no stoma or peristoma bleeding;

1= stoma or peristomal bleeding superficial and stopped quickly; 2= requires prolonged pressure  $\geq 10$  minutes, 3= requires advanced medical intervention. **Necrosis scoring:** 1= dusky stoma; 2= stoma that is less than or equal to 50% black; 3= stoma that is greater than 50% black. **Stenosis scoring:** 1= stoma os that is less than 5th digit diameter, with no pain or discomfort and output is normal; 2= stoma os that is less than 5th digit in diameter, has ribbon-like output, and with occasional abdominal discomfort; 3= stoma os that is unable to accommodate the 5<sup>th</sup> digit, no output x 6 hours or greater, and with abdominal pain and distention. **Retraction scoring:** 1= stoma is level with the skin; 2= stoma is below skin level; 3= stoma is greater than 2 centimeters below skin level or is unable to be visualized. **Hyperplasia scoring:** 0= no hyperplasia around the stoma; 1= hyperplasia that is 1-49% around stoma; 2= hyperplasia that is 50-74% around stoma; or 3= hyperplasia that is 75-100% around stoma. **Mucocutaneous Separation Scoring:** 1= 1-49% separation of the stoma from the mucocutaneous junction; 2= 50-74% separation of the stoma from the mucocutaneous junction; 3= 75-100% separation of the stoma from the mucocutaneous junction.

#### IV-Ostomy complications risk factor assessment tool

It was used to assess potential risk factors of ostomy complications. It was adapted from *Pittman 2011* and modification was done by the researchers. Validity and reliability was done. It demonstrated acceptable content validity (CVI= 0.9). Expert ratings also provided evidence of content validity for clarity, comprehensiveness, and appropriateness. It demonstrated acceptable reliability ( $r = .98$ ,  $p = .035$ ).

**Scoring system:** It used a likert-like scale with individual item score. This tool consisted of eight items with specific scoring as the following: **Age scoring:** 1= age 18-49, 2= age 50-59, 3= age 60-69, or 4= age 70 or greater. **BMI:** 1= BMI 18.5-24.9; 2= BMI 24.9- 29.9; 3= BMI 30-35; or 4= BMI greater than 35. **Smoking status:** Mark 1= nonsmoker and has never smoked; 2= quit smoking greater than 2 months ago; 3= quit smoking less than 2 months ago; or 4= current smoker. **ADL Function:** Mark 1= dependent in 5-6 ADL; 2= dependent in 3-4 of the ADL; 3= dependent in 1 or 2 ADL; and 4= the patient that is independent in all 6 ADL. **Pre-operative Education received: about the operation, what expected after your surgery and urinary stoma care guidelines:** Mark 1= No, 2= 1 component received, 3= 2 components received, or 4= All components received. **Post-operative urinary stoma care guidelines received: about the ostomy supplies, how to empty the pouch, how to change the pouch and diet:** Mark 1= No ; 2= 1-2 items; 3= 3-4 items; or 4= All items. **Stoma Care Proficiency:** Mark 1= unable to complete the task without hands-on assistance; 2= requires 3 or more verbal cues to complete the task; 3= requires less than 3 verbal cues to complete the task; and 4= independent and competent in completing the pouch change.

#### V- Stoma Care Self-Efficacy Scale

It was adopted from *Bekkers 1996*. Stoma Care Self-Efficacy which refers to the conviction of permanent urostomy patients that they can successfully manage their stoma to minimize adverse outcomes. This scale has two components, the first component, Stoma Care Self- Efficacy (Cronbach's alpha = 0.94, 13 items), assesses expected self-efficacy regarding capability to care for one's stoma. The second Social Self-Efficacy (Cronbach's alpha = 0.95 nine items), assesses self-efficacy regarding social functioning with the stoma. The two scales are highly correlated ( $r = 0.73$ ). Because our focus was on patients' ability to care for their stoma, we used the Stoma Care Self-Efficacy subscale. **Scoring system:** Patients' responses were categorized as follow: 1= not being confident at all, 2 = slightly confident, 3 = fairly confident, 4 = highly confident and 5 = extremely confident. High scores refer to positive self-efficacy.

#### Urinary stoma care Guidelines:

It was developed by researchers based on the related recent literatures (*Lee , Abol-Enein , Artibani , Bochner & Dalbagni, 2014 ; Eelan, Kiesbye & Pearce, 2014 ; Bafford & Irani2013 ; Cody, Nabi , Dublin, Mc Clinton & Neal, 2012 ; Colwell & Carmel, 2012 ; Rosdhl & Kowalski, 2012*). It was Written in Arabic language to be suitable for all patients regardless to their educational level. Its content validity ascertained by 7 experts in medical surgical nursing and urology surgeons and their opinion was considered and modifications were done. It includes two parts: **Part I: Theoretical part:** It was designed to cover knowledge and health care practice related to urinary diversion, perminant urinary stoma and urinary stoma care. **Part II: Practical part:** It was concerned with self-care practices regarding to stoma care and observations, emptying the pouch and changing pouching system

#### 2.8 Operational design:

The operational design includes preparatory phase, pilot study and field work

**2.8.1 Preparatory phase:** It included reviewing of the related literature, and theoretical knowledge of varies aspects of the study using books, articles, periodicals and magazines to develop tools for data collection.

**2.8.2 Content validity and reliability:** Content validity were ascertained by a group of 4 experts from medical surgical nursing department, Faculty of Nursing, Ain shams university and 3 experts from urological surgery, Faculty of Medicine Ain shames universty. Their opinion was elicited regarding the format, layout, consistency, accuracy and relevance of the tools and modification was done. Reliability was estimated statistically for the

developed tools by alpha cronbach test.

**2.8.3 Ethical considerations:** The ethical considerations in this study included the following: The researcher clarified the objectives and the aim of the study to patients included in the study. The researcher maintains an anonymity and confidentiality of patients' data. Patients were allowed to choose to participate or not and they were informed that they have the right to withdraw from the study at any time without giving any reason.

**2.8.4 Pilot study:** A pilot study was conducted on 10 %of subjects (5 patients) to test the applicability and feasibility of the study tools as well as time needed to fill this tool . Obtained results used as a guide to reconstruct the changes needed in the data collection tools and those subjects were excluded from the study sample.

**2.8.5 Field work:** The actual field work of this study started at the beginning of May 2016 and had been completed of April 2017. This period of time was divided into:

### **2.9 Implementation phase:**

Patients in the urologic department and the urologic outpatient clinic who met the study criteria were included in the study after explaining the purpose of the study and obtaining their oral consent before any data collection. The first 25 patients were selected to be a control group, while the second 25 patients were selected to be a study group. The researchers collected the data during the morning and afternoon shifts in urologic department and the urologic outpatient clinic at two days/ week. For the control group, data collection started by the interviewing process by filling A structured urinary stoma interview questionnaire tool ( I) part 1&2 which took about 20 minutes to collect demographic data and patients' knowledge, then, Patient's urinary stoma care practice observational checklist tool (II) which took about 25 minutes, and Stoma Care Self-Efficacy Scale tool (V) which took about 15 minutes, finally the Ostomy complications risk factor assessment tool , tool (IV) which took about 15 minutes. The researcher reviewed each point in front of patient to be sure that no points are missed. While for the study group data collection started also by the same sequence as the control group which took also the same time to be filled. The researcher implemented the urinary stoma care guidelines preoperatively for each patient in the study group separately or in small group from 2-3 patients and and continued postoperatively according to patient's educational need especially the practical part of stoma care . The sessions were given according to each patient needs. The urinary stoma care urinary stoma care guidelines were presented in theoretical and practical sessions, the theoretical part was conducted through lectures, and group discussion, using poster as a media, and clarified each items in the guidelines for every patient which was taken in 2 sessions (each session about 40-60 minute). The practical part was conducted through demonstration, re-demonstration, using real materials. They were taken in 3 sessions (each session about 40-60 minute), at the end, patients were informed to be in contact with the researchers by telephone for any guidance.

**2.10 Evaluation phase:** It was emphasized on:

- 1- Evaluating the effectiveness of the urinary stoma care guidelines on patients' knowledge and urinary stoma care practices patients' through the comparison between the control and study group pre-, post- guidelines intervention immediately before discharge and after 3 months post discharge using tool (I) and tool (II).
- 2- Evaluating the effectiveness of the urinary stoma care guidelines on patients' self efficacy through the comparison between the control and study group pre-guidelines intervention and after 3 months post discharge using tool (V).
- 3- Evaluating the effectiveness of the urinary stoma care guidelines on patients' peristomal complications after 3 months post discharge through the comparison between the control and study groups using tool(III).
- 4- Identification of the risk factors which were correlated with peristomal complications after 3 months post discharge among all the studied patients under the study using tool (IV).

**2.11 Statistical design:** Numerical data(quantitative) were presented as mean and standard deviation (SD) values. Qualitative data were presented as frequencies (n) and percentages (%). Independent-samples t-test of significance was used when comparing between two means, satisfactory levels pre-, post as well as at follow-up periods. Chi-square test or Fisher exact test when applicable were used for comparisons regarding qualitative data. Pearson correlation coefficient is used for quantitative variables. The significance level was set at  $P \leq 0.05$ . Statistical analysis was performed with IBM SPSS Statistics Version 20.

### 3. Results:

**Table 1: Distribution of patients in the study and control group regarding their demographic characteristics (n=25 patients in each group).**

Demographic characteristics	Study group		Control group		x <sup>2</sup> value	P-value
	N(25)	%	N(25)	%		
<b>Age (Years)</b>					0.23	0.890
40-< 50	3	12.0	2	8.0		
50- <60	15	60.0	16	64.0		
≥ 60	7	28.0	7	28.0		
<b>Mean ± SD</b>	56.21±9.15		55.5±7.03			
<b>Gender</b>					0.10	0.758
Male	17	68.0	18	72.0		
Female	8	32.0	7	28.0		
<b>Marital status</b>					0.57	0.451
Single	1	4.0	0	0.0		
Married	23	92.0	21	84.0		
Divorced	1	4.0	3	12.0		
Widowed	0	0.0	1	4.0		
<b>Education</b>					0.73	0.693
Illiterate	7	28.0	5	20.0		
Reads and writes	11	44.0	15	60.0		
Secondary level	5	20.0	4	16.0		
Higher education	2	8.0	1	4.0		
<b>Occupation</b>					3.97	0.410
Not working	3	12.0	0	0.0		
Employee	5	20.0	7	28.0		
Retired	3	12.0	4	16.0		
Housewife	6	24.0	4	16.0		
Farmer	8	32.0	10	40.0		
<b>Residence</b>					0.76	0.382
Urban	8	34.0	11	44.0		
Rural	17	66.0	14	56.0		
<b>Income from patients' point of view</b>					0.12	0.733
Sufficient for treatment fees	5	20.0	6	24.0		
Insufficient for treatment fees	20	80.0	19	76.0		

Regarding demographic characteristics of the study and control groups, **Table 1** showed that mean age of the study group was 56.21±9.19, while the mean age of control group was 55.5±7.07. Regarding patient's gender, it was found that, 68.0% and 72.0% of Patients of the study and control groups were males respectively. As regards to their marital status 92.0% and 84.0% of the study and control groups were married respectively. In relation to educational level, 44.0% of the study group and 60.0% of control group were reads and writes. As well as, this table showed that 32.0% and 40.0% of study and control groups were farmer. Meanwhile, 66.0% of the study group and 56.0% of control group resided in rural areas. Regarding to their income from their point of view sufficient for treatment fees 20.0% of the study group and 24.0% of the control group had stated that income was not sufficient for treatment fees. Also, there were insignificant differences between two groups regarding all demographic characteristics.

**Table 2: Comparison between the study and control group regarding the satisfactory level of patients' knowledge about urostomy and stoma care pre, post and follow up implementation of urinary stoma care guidelines. (n=25 patients in each group).**

Items of patients' knowledge	Satisfactory level of patients' knowledge												
	Pre (n=50)	Post intervention				Test	P-value	3 months follow up intervention				Test	P-value
		Study (n=25)		Control(n=25)				Study(n=25)		Control(n=25)			
N	%	N	%	N	%	N	%	N	%				
Urostomy	All cases in the two groups had score zero so no comparison is done	23	92.0	2	8.00	Z = 5.94 P= 0.000*	23	92.0	4	16.00	Z = 5.39 P= 0.000*		
		Mean ± SD 6.82 ± 1.40		Mean ± SD 2.92 ± 2.22			Mean ± SD 6.04 ± 1.32		Mean ± SD 3.08 ± 1.47				
Stoma care		22	88.0	3	12.00	Z = 5.37 P=0.000*	20	80.0	4	16.0	Z=4.53 P=0.000*		
		Mean ± SD 13.18 ± 3.37		Mean ± SD 0.12 ± 0.85			Mean ± SD 11.66 ± 3.63		Mean ± SD 6.26 ± 4.48				
Total		21	84.0	3	12.00	Z=5.10 P=0.000*	20	80.0	4	16.0	Z = 4.53 P=0.000*		
		Mean ± SD 18.32 ± 2.79		Mean ± SD 6.08 ± 3.89			Mean ± SD 18.56 ± 2.20		Mean ± SD 10.96 ± 3.27				

Table 2 demonstrated that neither the study nor the control group had satisfactory level of knowledge about urostomy, stoma care and total knowledge pre- urinary stoma care guidelines implementation, while, post-urinary stoma care guidelines guide lines implementation, 92.0%, 88.0% & 84.0% of the study group in contrast to 8.0%, 12.0% & 12.0% of the control group had satisfactory level of knowledge respectively with highly statistically significant difference between them (p<0.001). Moreover, 3 months follow-up urinary stoma care guidelines implementation, 92.0%, 80.0% & 80.0% of the study group in contrast to 16.0%, 16.0% & 16.0% of the control group had satisfactory level of knowledge regarding the previous items respectively with highly statistically significant difference between them (p<0.001).

**Table 3: Comparison between the study and control group regarding the satisfactory level of patients' urinary stoma care practice pre, post and follow up implementation of urinary stoma care guidelines (n= 25 patients in each group).**

Items	Satisfactory level of patients' practice												
	Pre (n=50)	Post intervention				Test	P-value	3 months follow up intervention				Test	P-value
		Study(n=25)		Control(n=25)				Study(n=25)		Control(n=25)			
N	%	N	%	N	%	N	%	N	%				
Cleaning the stoma	All cases in the two groups had score zero so no comparison is done	15	60.0	1	4.0	Z=4.24 P=0.0000	21	84.0	4	16.0	Z=4.81 P=0.0000		
		Mean ± SD 4.1 ± 1.9		Mean ± SD 0.2 ± 0.1			Mean ± SD 4.8 ± 1.8		Mean ± SD 0.9 ± 1.2				
Emptying the pouch		17	68.0	6	24.0	Z=3.12 P=0.0018	22	88.0	9	36.0	Z=3.79 P=0.0002		
		Mean ± SD 3.0 ± 1.6		Mean ± SD 0.5 ± 0.1			Mean ± SD 3.0 ± 1.2		Mean ± SD 1.1 ± 0.5				
Change the flange		16	64.0	2	8.0	Z=4.12 P=0.0000	20	80.0	5	20.0	Z=4.24 P=0.0000		
		Mean ± SD 7.7 ± 4.7		Mean ± SD 0.6 ± 0.3			Mean ± SD 8.7 ± 4.0		Mean ± SD 5.1 ± 2.5				
Total		15	60.0	2	8.00	Z=3.88 P=0.0001	21	84.0	5	20.0	Z=4.53 P=0.0000		
		Mean ± SD 14.88 ± 3.60		Mean ± SD 5.96 ± 2.05			Mean ± SD 16.16 ± 4.26		Mean ± SD 9.08 ± 2.25				

Table 3 illustrated that no one of the study and control group had satisfactory level of practice about cleansing the stoma, emptying the pouch, changing the flange and subsequently total practice pre-urinary stoma care guidelines implementation, while, post- urinary stoma care guidelines implementation, 60.0%, 68.0%, 64.0% & 60.0% of the study group in contrast to 4.0%, 24.0%, 8.0% & 8.0% of the control group had satisfactory level of the previously mentioned practice respectively with highly statistically significant difference

between them ( $p < 0.001$ ). Moreover, 3 months follow-up urinary stoma care guidelines implementation, 84.0%, 88.0%, 80.0% & 84.0% of the study group in contrast to 16.0%, 36.0%, 20.0% & 20.0% of the control group had satisfactory level of the previously mentioned practice respectively with highly statistically significant difference between them ( $p < 0.001$ ).

**Table 4: Comparison between the study and control groups 3 months follow up implementation of urinary stoma care guidelines regarding Incidence and severity of ostomy complications (n= 25 patients in each group).**

Ostomy complications	Incidence and severity of ostomy complications 3 months follow up					
	Study group (n=25)		Control group(n=25)		x2 value	P value
	N	%	N	%		
<b>Leakage</b>						
None	0	0.0	0	0.0	9.69	<b>0.0079</b>
1-2times/month	14	56.0	4	16.0		
1-2 times /week	11	44.0	19	76.0		
1-2 times /day	0	0.0	2	8.0		
<b>Peristomal Irritant Dermatitis</b>						
None	0	0.0	0	0.0	22.10	<b>P=0.000</b>
Mild	18	72.0	2	8.0		
Moderate	6	24.0	15	60.0		
Severe	1	4.0	8	32.0		
<b>Stomal Pain</b>						
None	0	0.0	0	0.0	21.35	<b>P=0.000</b>
Score from 1 to 3	16	64.0	1	4.0		
Score from 4 to 6	8	32.0	16	64.0		
Score from 7 to 10	1	4.0	8	32.0		
<b>Stomal Bleeding</b>						
None	13	52.0	4	16.0	7.91	<b>P=0.0191</b>
Superficial	8	36.0	16	64.0		
Moderate	3	12.0	5	20.0		
Severe	0	0.0	0	0.0		
<b>Stomal Necrosis</b>						
None	24	96.0	23	92.0	Fisher Exact	<b>P=1.0000</b>
Stoma Dusky	1	4.0	0	0.0		
Stoma 50% black	0	0.0	1	4.0		
Stoma >50% black	0	0.0	1	4.0		
<b>Stomal Stenosis</b>						
Stoma above skin	24	96.0	23	92.0	Fisher Exact	<b>P=1.0000</b>
Stoma skin level	1	4.0	2	8.0		
Stoma below skin level	0	0.0	0	0.0		
Stoma >2cm below skin level	0	0.0	0	0.0		
<b>Stomal Retraction</b>						
Stoma above skin	22	88.0	22	88.0	Fisher Exact	<b>P=1.0000</b>
Stoma skin level	2	8.0	1	4.0		
Stoma below skin level	1	4.0	2	8.0		
Stoma >2cm below skin level	0	0.0	0	0.0		
<b>Stomal Hyperplasia</b>						
None	25	100.0	25	100.0	Equal	-
<b>Mucocutaneous Separation</b>						
None	25	100.0	25	100.0	Equal	-

**Table 4** emphasized the incidence and severity of ostomy complications in relation to the study and control groups 3 months follow up implementation of urinary stoma care guidelines. Regarding leakage, 56% of the study group had leakage 1-2 times/month, while 76% of the control group had leakage 1-2 times/week. Concerning peristomal dermatitis, 72% of the study group showed mild dermatites, while, it was moderate in 60% of the control group. Moreover, stomal pain, it was mild in 64% of the study group, while, 64% of the control group had moderate stomal pain. As for stomal bleeding, 52% of the study group hadn't show any sign of bleeding, while 64% of the control group had a signs of superficial bleeding. Accordingly, there were statistically significant difference between the study and control group in relation to leakage, peristomal

dermatitis, stomal pain and stomal bleeding. Furthermore, 96% of the study group and 92% of the control group hadn't any signs of stomal necrosis and stenosis. Also, 88% of both the study and control group hadn't stomal retraction. Finally, all of the study and control group hadn't show stomal hyperplasia and mucocutaneous separation. Accordingly, there were no statistically significant difference between the study and control group in relation to stomal necrosis, stenosis, hyperplasia and mucocutaneous separation.

**Table 5: Comparison between the study and control group regarding level of self-efficacy pre, and follow up implementation of urinary stoma care guidelines (n= 25 patients in each group).**

Levels of self-efficacy	Patients' stoma care self-efficacy							
	Pre- intervention				3 months Follow-up intervention			
	Study group(n=25)		Control group(n=25)		Study group (n=25)		Control group(n=25)	
	N	%	N	%	N	%	N	%
Not confident	17	68.0	18	72.0	2	8.0	15	60.0
Slightly confident	7	28.0	6	24.0	5	20.0	7	28.0
Fairly confident	1	4.0	1	4.0	15	60.0	3	12.0
Highly confident	0	0.0	0	0.0	3	12.0	0	0.0
Extremely confident	0	0.0	0	0.0	0	0.0	0	0.0
<b>x<sup>2</sup> value</b>	<b>x<sup>2</sup> = 0.10</b>				<b>x<sup>2</sup> =20.99</b>			
<b>P value</b>	<b>P =0.7576</b>				<b>P =0.0000</b>			
<b>Mean ± SD</b>	10.48 ± 5.68		9.92 ± 5.92		26.16 ± 8.77		14.16 ± 7.26	
<b>T test</b>	<b>T =0.34</b>				<b>T =5.28</b>			
<b>P value</b>	<b>P =0.734</b>				<b>P =0.000</b>			

Regarding the patients' level of self-efficacy **table 5** clarified that, pre- urinary stoma care guidelines implementation, 68.0% & 28.0% of the study group and 72.0% & 24.0% of the control group were not confident and slightly confident respectively with no statistically significant difference between them (p=0.7576). while, 3 months follow-up urinary stoma care guidelines implementation, 20.0% & 60.0% of the study group were slightly confident and fairly confident in contrast to 60.0% & 28.0%, of the control group were not confident and slightly confident respectively with statistically significant difference between them (p<0.001).

**Table 6: Correlations among the total scores of the study variables including patients' knowledge, practice, self-efficacy and ostomy complications in the study and control groups at 3 months follow up urinary stoma care guidelines (n= 25 patients in each group).**

Variables	Study group (n=25)				Control group (n=25)			
	Knowledge Score	Practice Score	Self-efficacy	Complications score	Knowledge Score	Practice Score	Self-efficacy	Complications Score
<b>Knowledge</b>	-	.652*	.439*	-.431*	-	.214	.140	-.112
<b>Practice</b>	.652*	-	.407*	-.618*	.214	-	0.266	-.252
<b>Self-efficacy</b>	.439*	.407*	-	-.474*	.140	.266	-	-.195
<b>Complications</b>	-.431*	-.618*	-.474*	-	-.112	-.252	-.195	-

\*: **Significant correlation.**

**Table 6:** showed that, in the study group, there were positive significant correlations between the total scores of patients' knowledge and practice, patients' knowledge and patients' practice and self-efficacy, while, there were negative significant correlations between the total scores of patients' ostomy complications and both of patients' knowledge, practice and self-efficacy. In contrast, for the control group, there were no significant correlations between all variables including the total scores of patients' knowledge, practice, self-efficacy and ostomy complications.

**Table 7: Correlations between Ostomy complications risk factor and Ostomy Complications Severity Index in all the studied patients study and control group 3 months follow-up the urinary stoma care guidelines (n= 50 patients).**

Ostomy complications risk factor	Ostomy complications (OCSI items)					Total score
	Leakage	Per-stomal dermatitis	Pain	Bleeding	Necrosis, stenosis, Retraction	
Age	-.151	-.071	-.015	-.03	Small numbers So, Test not applied	- 0.060
BMI	<b>.597*</b>	<b>.443*</b>	.237	.221		<b>.396*</b>
Smoking status	-.035	-.04	-.011	-.148		- .099
ADL function	<b>-.325*</b>	<b>-.296*</b>	- <b>.323*</b>	-.281		-.214
Pre- operative Education	-.12	-.13	-.12	-.04		- .05
Post- operative Education	<b>-.410*</b>	<b>-.556*</b>	-.229	-.205		<b>-.480*</b>
Stoma care proficiency	<b>-.510*</b>	<b>-.769*</b>	- <b>.350*</b>	<b>-.570*</b>		<b>-.650*</b>

\*: *Significant correlation.*

**Table 7:** showed that, there were positive significant correlations between the total scores of patients' BMI and leakage, peristomal dermatitis and the total scores of patients' ostomy complications. While, there were negative significant correlations between patients' ADL and leakage, peristomal dermatitis and peristomal pain. Moreover, there were negative significant correlations between patients' post-operative education and leakage, peristomal dermatitis and total scores of patients' ostomy complications. Also, there were negative significant correlations between patients' stoma care and leakage, peristomal dermatitis, peristomal pain, peristomal bleeding and total scores of ostomy complications. In contrast, there were no significant correlations between all complications and both of patients' age, smoking and pre-operative education.

#### 4. Discussion

Peristomal skin complications are quite common among ostomy patients, and both prevention and proper management of these complications are important to the patient's well-being. Preventing cases of peristomal complications can make postoperative recovery and the subsequent lifestyle more bearable for the patient. Stoma-care guidelines intervention is an effective way forward to for optimize urinary stoma self-care as an element in a multidisciplinary pathway to improve the patients' pathway and optimize outcome (*Jensen, Kiesby, Soendergaard, Jensen & Kristensen, 2017*).

The discussion of the this study findings will emphasize the study aim which was stated as the effect of urinary stoma care guidelines on patients' self efficacy and prestomal complications after permanent urostomy. The present study revealed that, the mean age of the study group was 56.21±9.19, and the mean age of control group was 55.5±7.07, with no statistically significant difference between them; these result are in agreement with *Rashidi, Long ,Hawkins , Menon and Bellevue 2016* whose research study titled by " Stoma creation: does onset of ostomy care education delay hospital length of stay?" and found that, The average age of a total of 180 patients undergoing surgery with ostomy creation was 57.3 ± 15 years.

Regarding to gender, the current study found that, near three quarter of the study and control groups were males with no statistically is significant difference between them; these results were similar to *Wolff & May, 2015* on their research study that identify gender-specific differences in bladder cancer and found that, The incidence of bladder cancer is three to four times greater in men than in women. Also, the result correlated in the same line with *Gamil, Abdel Gawad , Abdel Baki and Mokhtar 2015* who found that, more than two-third of the sample were males while one-third were females.

In relation to the educational level, the current study showed that, about one third of the patients in the study group; as well as more than half of patients in the control group were reads and writes with no statistically significant difference between them. This result was similar to *Omid, et al. 2014* who carried out study about occupational for risk of bladder cancer and found that less than half of the study subject could read and write. Also the result is similar to *Mohmed 2011* who carried the study about design and validation of educational tool for assessment needs of patients with stoma and found that the majority of the patients could read and write. This could reflect their low socioeconomic status and indicate the effect of the disease on the patients' life.

Concerning marital status, this study showed that the majority of the study and control groups were married with no statistically significant difference between them. This result is incongruent with *Ahmed 2014* who studied outcomes of urinary stoma care guidelines on awareness and self – efficacy among patients with urostomy and mentioned that, more than half of study and control patients were married. From the researchers

point of view this might be due to that the age for all patients in both the study and control group was over 40 years and in this age most of the Egyptians supposed to be married for at least 10 years ago.

As for occupation, slightly about one third of patient in the study group and less than half of the patients in the control group were farmer with no sign for statistically significant difference between them. This finding is supported by *Saied 2012* who studied nursing management protocol on the patients 'undergoing urinary diversion who reported that about one third of the studied subjects were farmers and resided in rural areas. This may be due to lack of health service in rural areas as well the Egyptian male in this area are more exposed to bilharzias as they were farmer and work in the field.

In relation to their opinion about the sufficiency of their income to cover the treatment fees most of the study and control groups from their point of view, had insufficient income for treatment fees with no statistically significant difference between them. This result was similar to *Azam, Farideh, Maryam, Grant and Rawl 2010* who studied quality of life in ostomy patients and found that the majority of the patients under study had economic problems. Insufficient income represented as a major problem to the patients because they couldn't afford drugs, supplies, needed for stoma due to low income and affect quality of life for ostomy patients.

Regarding patients' knowledge about, urostomy, and stoma care pre urinary stoma care guidelines implementation, the current study showed that, none of patients in study or control groups had satisfactory level of knowledge regarding previous items while in post and follow up urinary stoma care guidelines implementation most of the patients in study group had satisfactory level of knowledge regarding previous items post urinary stoma care guidelines, with a slight decrease at follow-up urinary stoma care guidelines implementation of urinary stoma care guidelines. While, the minority of control group in post urinary stoma care guidelines and none of them at follow up urinary stoma care guidelines implementation had satisfactory level of knowledge with statistically significant difference between the two groups post and follow up implementation of urinary stoma care guidelines. These results are congruent with *Mohamed 2014* who studied impact of self-care instructional program on urostomy patients' outcome and found that, none of patients with urostomy had and satisfactory level of knowledge pre implementation of instructional program, but after implementation of the nursing intervention, the study group became more knowledgeable about urostomy compared to the control group. This also goes with *Culha, Kosgeroglu and Bolluk 2016* who conducted study on 64 stoma patients, 32 of whom were intervention group and 32 of whom were control group at one university research hospital and two state hospitals at Eskisehir in Turkey. After stoma surgery, planned self-care education was given to intervention group, and control group had routine service care, they found that the stoma knowledge scores of the intervention group were higher than the control group with a significant difference between the study and the control groups. From our findings, these differences were noticed immediately before discharge and three months after urinary stoma care guidelines implementation; this improvement may be due to the effectiveness of urinary stoma care guidelines implementation among the patients in the study group post exposure to their guidelines.

As for total patients' knowledge and practice about stoma care, the current study revealed that, statistically significant improvement in the study group' knowledge post and follow up implementation of urinary stoma care guidelines as compared to pre implementation urinary stoma care guidelines in contrast to the control group. This is congruent with the results of the research study done by *Grant, McCorkle, Hornbrook, Wendel and Krouse 2013* when developed a chronic care ostomy self-management program, where found that patient education offers information and technical skills, self-management education enhances self efficacy, teaches problem-solving skills, and cognitive restructuring. This obvious knowledge improvement might be related to the provision of educational booklet and verbal instructional information. Also the studied group have a hope for rapid recovery as well as return to usual life as soon as possible.

Results of the current study revealed that, all of the patients in the study and control groups had unsatisfactory practice regarding to stoma care, empty the pouch, and changing the pouching flang before the urinary stoma care guidelines compared to the majority who had a statistically significant increase in mean scores post implementation of urinary stoma care guidelines. This success might be attributed to the guidelines provided to them through individual training of patients using simple and attractive media, and simulation techniques. And may be as a result of continuous demonstration, re demonstration, and follow up and practical content of the instructional booklet which was given to the studied subjects with the continuous explanations, reinforcement and feedback.

The previously mentioned study result regarding patients' practice stoma care is supported with *Saied 2012* who studied impact of implementing a nursing management protocol on the patients' outcome undergoing urinary diversion and his results revealed that there was a statistically significant difference between the two studied groups in different assessment periods, indicating higher overall post mean practice variable scores among the study group subjects as compared to the control group subjects mean scores.

Self-efficacy is enhanced when patients succeed in solving patient-identified problems. Concerning the patients' level of self-efficacy that, results of the current study clarified that more than two third of the study and

control group were not confident with no statistically significant difference between them pre-urinary stoma care guidelines implementation. While, post urinary stoma care guidelines implementation, near two third of the study group were slightly confident in contrast to the near two third of the control group were not confident with statistically significant difference between them. And this was supported by these two studies *Grant, et al., 2013* who found that patient education offers information and technical skills, so enhances self efficacy. Also, *Jensen, et al., 2017* suggested in their research entitled "Efficacy of preoperative urinary stoma education on self-efficacy after radical cystectomy; secondary outcome of a prospective randomized controlled trial a study" that a preoperative stoma-education is an effective intervention for positive efficacy and add to the evidence base of rehabilitation.

Moreover, in relation to incidence and severity of ostomy complications in the study and control groups 3 months follow up implementation of urinary stoma care guidelines, the present study showed that leakage, dermatitis and stomal pain were the most common among more than half of the study group who had leakage 1-2 times/month, while three quarter of the control group had leakage 1-2 times/week. Concerning peristomal dermatitis, it was mild in near three quarter of the study group, while, it was moderate in near of two third of the control group. Also, stomal pain, showed a mild level in near two third of the study group, while, it was moderate for near of two third of the control group. Accordingly, there were statistically significant difference between the study and control group in relation to leakage, peristomal dermatitis and stomal pain. Furthermore, almost of the study and control group hadn't stomal necrosis, stenosis and retraction. Finally, all of the study and control group hadn't stomal hyperplasia and mucocutaneous separation. Accordingly, there were no statistically significant difference between the study and control group in relation to stomal necrosis, stenosis, hyperplasia and mucocutaneous separation.

The previously current study results correlate with *Salvadalea 2013* who found in his research entitled "The incidence of stoma and peristomal complications during the first 3 months after ostomy creation". Peristomal skin complications developed in two third of the study sample. The onset of peristomal skin complications occurred most frequently during the 21- to 40-day time period. The most common skin conditions at nearly all time intervals were peristomal leakage and dermatitis. Also, it was supported by *Pittman 2011* which entitled by "Ostomy complications and associated risk factors" and stated that most of the participants had developed at least one ostomy complication at follow-up. Leakage was one of the most commonly occurring complication with almost sixty percent of the participants experiencing this problem. Peristomal dermatitis was the next most commonly occurring complication with half of the participants experiencing it. Stomal pain and stomal bleeding were the next most common complications.

The present study results showed that, in the study group, there were positive significant correlations between the total scores of patients' knowledge and practice, also among patients' knowledge, practice and self-efficacy in contrast to the control group, there were no significant correlations between all variables. This is supported with *Culha, Kosgeroglu and Bolluk 2016* results of their study entitled "Effectiveness of Self-care Education on Patients with Stomas" who stated that it is possible to state that as the stoma knowledge scores of the patients in the study group increase, their self-care scores also increase and enough knowledge about disease provides successful self-care.

Additionally, the present study results showed that, in the study group there were negative significant correlations between the total scores of patients' ostomy complications and both of patients' knowledge, practice and self-efficacy in contrast to the control group, there were no significant correlations between all variables. This goes in the same line with the research study done by *Ran, et al. 2016* who studied self-care knowledge access and self-care needs in patients with stomas one month post-surgery in a Chinese Tumor Hospital, This study identified a series of self-care problems and needs of post-ostomy patients. The main concerns of patients on their daily self-care activities included the care of peristomal skin, pouch care, ways to acquire self-care knowledge and other issues.

Because of the high incidence of peristomal skin complications in the ostomy patient population, it is also important to consider certain risk factors that may predispose the patient to developing these complications. Comprehensive analysis of the identified factors associated with ostomy complications is essential and important because it enables nurses to profile patients who have higher risk of developing complications to establish an intervention plan that takes into account these factors and contributes to the prevention or early detection of complications. Also, identification of risk factors associated with the development of stoma complications allows nurses to early identify patients' vulnerability indicators and intervene more effectively.

Concerning the risk factors assessed in the present study, The results of this study revealed that, there were negative significant correlations between patients' post-operative education and both of leakage, peristomal dermatitis and the total scores of patients' ostomy complications. This goes in the same line with *Pinto, et al., 2017 and Chandrasekar and Shenbagaseethapriya 2017* in their research study which aimed to assess factors associated with the development of stoma and peristomal skin complications who found that Pre and postoperative education and follow-up after hospital discharge are some of the nursing-sensitive factors.

Also, the results of the present study revealed that, there were negative significant correlations between patients' stoma care and both of leakage, peristomal dermatitis, peristomal pain, peristomal bleeding and total scores of ostomy complications. The previous study result was confirmed with the findings of the research study done by *Agarwal and Ehrlich 2010* who reviewed various factors associated with the outcome of stoma education and counseling regarding the outcome of stoma surgery.

Regarding the factors of patients' BMI, the results of the current study also revealed that there were positive significant correlations between the total scores of patients' BMI and both of leakage, peristomal dermatitis and the total scores of patients' ostomy complications. This is supported by the research study of *Salvadaleña 2013* entitled by " The incidence of stoma and peristomal complications during the first 3 months after ostomy creation" who found that BMI is a risk factors associated with increase incidence and severity of peristomal complications. Obesity is associated with intraoperative difficulties related to the surgical technique, as well as with the subsequent selection and adaptation of collection systems in large abdomen. So, it is important for those patients to control their body weight before and after ostomy creation.

In contrast, the results of the current study also revealed that, there was no significant correlation between all complications and patients' age. This might be due to the age of the most of the study sample was above fifty years. This goes in the same line with the results of the research study of *Pittman, 2011* which entitled by " Ostomy complications and associated risk factors. While, This is contradicted with the findings of *Agarwal, and Ehrlich 2010* in their research study of stoma dermatitis and its prevalence.

## 5. Conclusion

In view of the findings, the research hypotheses has been proved as patients with permanent urostomy who received urinary stoma care guidelines had better self-efficacy and less peristomal complications than patients who did not receive guidelines. Regarding self-efficacy, more than two third of the study and control group were not confident pre- stoma care guidelines implementation. While, three months follow-up, three fifth of the study group were fairly confident in contrast to the control group were not confident with statistically significant difference between them. Concerning peristomal complications, leakage, peristomal dermatitis, stomal pain and stomal bleeding were less in incidence and severity in the study group in comparison to the control group with a statistically significant difference between the two groups at three months follow up after implementing the urinary stoma care guidelines.

## 6. Recommendations:

- 1- The role of wound ostomy nurse (WON) should be identified and activated in Egypt through the Egyptian nursing syndicate as they play avital role in caring for ostomy patient preoperatively and postoperatively.
- 2- It is essential to implement selfcare programs that can lead to early prediction for the presence of peristomal complications and apply its management measures as early as possible.
- 3- Futhur researches should be done to assess the risk factors for ostomy patient as predictors for peristomal complications occurrence after urostomy and subsequently an early management and preventable measures can be utilized.
- 4- Development of further research studies on the association between risk factors and the development of complications.
- 5- It is essential to implement self-care programs and should be emphasized on weight control for persons living with an ostomy.

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