

Effect of Implementing a Nursing Management Protocol on the Postoperative Health outcomes for Patients Undergoing Radical Cystectomy with Urinary Diversion

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Abstract

Background: Radical cystectomy is the primary treatment for patients with muscle-invasive bladder cancer, whereas alternative treatments are reserved for patients with extensive comorbid conditions or poor performance status. It was observed that the numbers of patients with bladder cancer requiring radical cystectomy accompanied with urinary diversion are increasing. These patients require meticulous collaborative care to improve the overall physical and psychological wellbeing. Nursing management protocols are a way of documenting and communicating patient care and should include daily aims, such as mobilization, that increase day by day. **Objective:** study was conducted to evaluate the effect of implementing a nursing management protocol on the postoperative health outcomes for patients undergoing radical cystectomy with urinary diversion. **Setting:** The study was conducted at the urology department at Alexandria Main University Hospital. **Subjects:** A convenience sample of 50 adult admitted at the above mentioned setting and diagnosed with bladder cancer undergoing radical cystectomy with urinary diversion. The subjects of the sample were sequentially divided into two equal groups; the first was the study group and comprised 25 patients and they received the nursing management protocol, the second was the control group which comprised 25 patients and exposed to routine care only. **Tools:** Data collected through; demographic data, knowledge assessment sheet, self-care skills observation, and quality of life assessment. Nursing management protocol was designed by the researcher. It was written and summarized in a simple Arabic language and supplemented by photos and illustrations to help the patient understand of the content. **Results:** The study results revealed that most of patients of the study and control group had poor knowledge pre application protocol of nursing care, while most of the study group had fair knowledge after application of proposed protocol of nursing care. Overall total scores of functional mobility & activities with a mean (17.88 ± 1.27), were improved significantly in the study group immediately after application nursing management protocol compared with the control group. Overall total scores of caring of stoma with a mean (18.72 ± 0.98) were improved significantly in the study group after one & half months of application of nursing management protocol compared with the control group. Mean scores for each domain of patient's quality of life, including physical health, psychological health, social relationships, and environment were improved significantly in the study group after one & half month of application of nursing management protocol and the improvement was significantly differences between the two groups in post protocol in all items. **Conclusion:** Applying the nursing management protocol had statistically significant improvement on knowledge, self-care skills and quality of life for studied patients undergoing radical cystectomy with urinary diversion postoperatively than their controls.

key words: Nursing Management Protocol, Postoperative Health Outcomes, Radical Cystectomy with Urinary Diversion.

I. Introduction

Bladder cancer (BC) is the most common malignancy of the urinary tract, the 7th most common cancer in men and the 17th in women ⁽¹⁾. In the United States, BC is the fourth most common cancer and the eighth leading cause of cancer-related death in humans ⁽²⁾. Worldwide, BC accounts approximately 450,000 new cases and 165,000 deaths ⁽³⁾. In developed areas of the world, such as North America and Western Europe, these BCs are predominantly urothelial (transitional cells). Non-urothelial tumors comprise a larger fraction of disease in other areas, particularly where schistosomiasis is prevalent ⁽⁴⁾.

Bladder schistosomiasis (bilharzia) is the second most common parasitic infection after malaria, with about 600 million people exposed to infection in Africa, Asia, South America, and the Caribbean ⁽⁵⁾. There is a well-established relationship between schistosomiasis and squamous cell carcinoma of the bladder, although a better control of the disease is decreasing the incidence of squamous carcinoma of the bladder in endemic zones such as Egypt ^(6, 7). BC represent (6.9%) in both sexes in Egypt in 2014, age-standardized incidence in Egypt rates per 100,000 were 166.6 (both sexes), 175.9 (males), and 157.0 (females) ⁽⁸⁾.

Similarly, invasive squamous cell carcinoma has been linked to the presence of chronic urinary tract infection (UTI) distinct from schistosomiasis. A direct association between BC and UTIs has been observed in several case-control studies, which have reported a two-fold increased risk of BC in patients with recurrent UTIs in some series ⁽⁹⁾. National Comprehensive Cancer Network (NCCN) guidelines recommend radical cystectomy as the primary treatment for patients with muscle-invasive bladder cancer, whereas alternative treatments are reserved for patients with extensive comorbid conditions or poor performance status ⁽¹⁰⁾. Radical cystectomy involves removal of the urinary bladder and associated organs: the prostate in men, and the uterus, ovaries, and part of the vagina in women ⁽¹¹⁾. Urinary diversion procedures are performed to divert urine to a new exit site, usually through a surgically created opening (stoma) in the skin. These procedures are primarily performed when a bladder tumor necessitates removal of the entire bladder (cystectomy). Urinary diversion has also been used in managing pelvic malignancy, birth defects, strictures, trauma to ureters and urethra, neurogenic bladder, chronic infection causing severe ureteral and renal damage, and intractable interstitial cystitis and as a last resort in managing incontinence ⁽¹²⁾.

There are three main types of urinary diversion surgeries which include ileal conduit urinary diversion, continent reservoir pouch and neobladder-to-urethra diversion. For all of these procedures, a portion of the small and/or large bowel is disconnected from the fecal stream and used for reconstruction ⁽¹³⁾. The ileal conduit is the most popular form of urinary diversion; a section of ileum is resected close to the ileocecal valve, the distal end of the ileum, which has been mobilized, is attached to the peritoneum and the ureters are implanted. The distal end of the ileum is then brought through and attached to the abdominal skin as a stoma. Urine can then flow through the ileal conduit and is collected in a bag attached to the surface of the skin ⁽¹⁴⁾. Throughout clinical experience in the urology department at Alexandria Main University Hospital, it was observed that the numbers of patients with BC requiring radical cystectomy accompanied with urinary diversion are increasing. These patients require meticulous collaborative care to improve the overall physical and psychological wellbeing. Several studies show that a nursing care plan is important to reduce morbidity and to improve recovery. Nursing management protocols are a way of documenting and communicating patient care and should include daily aims, such as mobilization, that increase day by day ^(15,16,17). The patient who undergoes radical cystectomy with urinary diversion has many nursing care needs because of alterations in the functional health patterns of elimination, health perception-health management, cognitive perceptual, self - perception, role relationships and quality of life ⁽¹⁸⁾. The nurse will be responsible for monitoring the patient's vital signs, fluid status (stoma/catheter output, drains, intravenous fluids, naso-gastric tube) need for analgesia and the administration of prescribed medication. The nurse should also monitor the stoma (if applicable) to ensure it remains pink and healthy in appearance. The patient will also require wound care and help with activities of daily living in the immediate postoperative period. Specialist input from other healthcare professionals such as stoma care nurses, physiotherapists and dieticians may also help ⁽¹⁹⁾.

Furthermore, this research could provide health professionals with an in depth understanding related to such patients which could be reflected positively on the quality of patient's life and improve the post-operative patient's health outcomes. It is hoped also that this effort could support the terrific role of the nurse in the patient's care through assessing and providing the required care and teaching about adapting and living with urinary diversion reaching their maximum functional capacity.

II. Material And Methods

Research Design:

A quasi experimental design was used in the present study.

Setting:

The study was conducted at urology department at Alexandria Main University Hospital.

Subjects:

This study comprised a convenience sample of 50 adult patients admitted to the above mentioned settings and diagnosed with bladder cancer undergoing radical cystectomy surgery. The study subjects were divided randomly into two equal groups; a study group, consisting of 25 adult patients who received the nursing management protocol and a control group, consisting of 25 adult patients who received the routine hospital care only. The patients, who participated in this study, were selected according to the following criteria:

- Patients aged more than 35 years old.
- Both sexes (male and female).
- Patients diagnosed with bladder cancer undergoing the radical cystectomy (Cutaneous continent urinary diversion).
- Able to communicate verbally.
- Available for telephone follow- up.

Tools for data collection:

Two tools developed by the researcher based on the review of recent related literature were used to collect the necessary data for this study.

Tool I: Radical Cystectomy Patient's Knowledge Structured Interview; this tool was developed by the researchers and translated to Arabic language, it contains two parts:

Part I: Patients' Clinical Data:

This part of the tool was included information related to past medical history and chief complaints including:

- ✓ Past medical history & co-morbidities:
 - Medical history of chronic diseases as (diabetes, hypertension, bleeding disorder, chronic constipation, COPD).
 - Previous hospital admissions with urinary tract disease, number of recurrences and method of treatment.
- ✓ Family history of bladder cancer or other diseases.
- ✓ Present clinical data of cancer characteristics and present complaints, including:
 - Onset of disease.
 - Signs& symptoms of disease as (blood in urine, frequent urination, burning during urination, lower back pain, trouble urinating and Loss of appetite).
 - Prescribed medication post- surgery.

Part II: Knowledge Assessment:

This part is a questionnaire that was developed by the investigator, after reviewing related literature to assess patient knowledge related to radical cystectomy surgery, assess baseline knowledge of patients about the disease as well as ensure the study subject's participation in the protocol of nursing care. It included 28 questions about the following:

- Knowledge related to the urinary bladder cancer included 5 questions.
- Knowledge related to radical cystectomy and urinary diversion included 6 questions.
- Knowledge related to preparing for surgery included 4 questions.
- Knowledge related to care of stoma included 7 questions.
- Knowledge related to home care and dangerous symptoms after discharge included 6 questions.
- **A scoring system of patient's knowledge was done as follows**, each correct answer had one score, while no answer or do not know had zero score.

The total knowledge score was judged by using a scoring system as follows: poor knowledge < 50%, fair knowledge 50 <75 % and good knowledge 75% and more.

The socio-demographic sheet was attached:

Additionally, Socio-demographic data tool was attached; this developed by the researcher and included; age, sex, marital status, level of education, occupation, income and residence area.

Tool II: - Radical Cystectomy Patient's Self-Care Skills Observational Checklist This tool was developed by the researcher and translated into Arabic language based on relevant literature^(216,217) and used to measure as well as evaluates self-care skills among patients undergoing radical cystectomy with urinary diversion which included two parts: functional mobility and activities and caring of stoma.

Tool III: - World Health Organization Quality of Life BREF Assessment Questionnaire (WHOQOL-BREF)

- This tool was developed by WHO at June 1997 to assess QOL and was updated at October 2005 then at February 2012^(218,219) and will be used to assess quality of patients life about the disease as well as, to assess the impact of a disease or condition on quality of life (QoL), to assess the impact of a medical or surgical intervention on QoL, to assess the relationship between QoL and health outcome.
- The WHOQOL-BREF is a 26-item that is being developed as a short version of the WHOQOL-100 assessment. The WHOQOL-BREF comprises the following four domains physical, psychological, social and environmental, in addition to global items concerning individuals overall quality of life.

III. Method

- An official letter from Alexandria University, faculty of nursing was submitted to the general directors of Alexandria Main University Hospital, urological department and head of nursing department.
- Verbal explanation of the nature and aim of the study was performed by the researcher to medical and nursing staff about the purpose of the study, time of data collection in order to obtain approval to carry out the study.
- Content validity of the tools and nursing management protocol were tested by 5 experts in the field of Medical - Surgical Nursing and urological department to assure the content validity, completeness and clarity of items and appropriate translation. Modification, correction and clarifying of the items were done, accordingly.
- The reliability of the tools was measured by Cronbach's alpha test. It indicated that tools I, and II have a reliability $r = 0.75$, tool III have a reliability $r = 0.90$ and IV have a reliability $r = 0.80$, indicating reliable tools.
- A pilot study was conducted on 5 patients out of the sample from the previously mentioned setting for testing, feasibility and applicability of the developed tools. Necessary modifications were done prior to data collection for the actual study; those patients were excluded from the study sample.
- Written approval to carry out the study was obtained from ethical committee of the faculty of nursing.
- Oral consent of the patients to participate in the study was obtained.
- Privacy of the patients was maintained.
- Confidentiality of the collected data was secured.

Procedures Of The Study:

This study was conducted through four consecutive phases: assessment, planning, implementation and evaluation.

- Assessment phase: Initial assessment of all patients before operation (study and control group) were carried out immediately before beginning of implementation of the nursing management protocol using tool I to collect baseline patients' data, health history, family history previous surgery, present clinical data, assess existing knowledge and self-care skills. This interview took about 30 to 45 minutes.
- Planning phase: Based on patients' assessment, Nursing Management Protocol for radical cystectomy with Urinary Diversion was formulated based on the guidelines of the American and European urological association, relevant literatures and on assessment of patients. The content was organized according to a feasible learning sequence (from easy to difficult) to enhance patients' understanding.
- Implementation phase: A Nursing Management Protocol was implemented to the study group. The researcher was interviewed and followed up patients at the urological unit of the Main Alexandria University hospital

IV. Indentations And Equations

Statistical analysis:

- After data collection, data were coded and transformed into specially designed forms as to be suitable for computer feeding. All entered data were verified for any errors.
- The Statistical Package for Social Sciences (SPSS) program version 20.0 was used for the analysis of the data. Frequency tables and cross tabulations were used to illustrate the results of categorical data and tested by the Chi Square Test or Fisher's Exact Test.
- Qualitative data were described using numbers and percent, and quantitative data were described using mean and standard deviation.
- Comparison between different groups regarding categorical variables was tested using the Chi - square test. When more than 20% of the cells had an expected count less than 5, correction for chi-square was conducted using Fisher's exact test or Monte Carlo correction. For normally distributed data, comparison between two independent populations was done using independent t-test.
- All statistical analysis was done using two tailed tests and alpha error of 0.05.
- Regarding P value, it was considered that: non-significant (NS) if $P > 0.05$, Significant (S) if $P < 0.05$, Highly Significant (HS) if $P < 0.01$

V. Figures And Tables

Table (1): Frequency distribution of the study and control group according to their socio-demographic characteristics the highest percentage of patients in the control group were between 55- < 65 years of age, and 44.0% of the study group were more than 65years. Males were more prevalent in the studied sample. The majority of patients in the study and control groups were married. Illiteracy was prevailing among more than one third of patients in the study and control groups. Additionally, the majority of studies, patients in both groups were housewives and manual workers, came from rural areas, did not have enough monthly income and there were no significant differences in socio-demographic characteristics between the two groups.

Table (2): Shows frequency distribution of the study and control group according to patient's clinical data, this table shows that most of patients in the both groups had DM, its noticed that most of patients in both study and control group had previous hospitalization, hadn't family history of disease, had signs and symptoms of blood, frequent urination, burning and loss of appetite. Additionally, the table shows that the majority of patients of study and control group that the onset of disease was less than one year.

Figure (1): shows distribution of the study and control group according to patient's knowledge. In relation to overall knowledge, the study results revealed that most of patients of the study and control group had poor knowledge pre application protocol of nursing care, while most of the study group had fair knowledge after application of proposed protocol of nursing care, and all of patients in control group had poor knowledge after routine nursing care indicating no statistical significant differences between study and control group pre implementing nursing management protocol, while after implementing nursing management protocol, there was a significant differences among study and control group in relation to patients knowledge about radical cystectomy, respectively.

Table (3): Shows mean scores of patients' knowledge in the study and control group before and immediately after implementing nursing management protocol. The scores for total and all items of knowledge of the study group were significantly increased immediately after application of nursing management protocol and where p values were found to be < 0.001 . Moreover, the scores for total and all items of knowledge of the control group were slightly increased immediately after routine nursing care but the differences were not statistically significant.

Table (4): Shows overall score of the study and control group according to patient's self-care related to functional mobility & activities before & immediately after implementing nursing management protocol. Overall total scores of functional mobility & activities with a mean (17.88 ± 1.27) , were improved significantly

in the study group immediately after application nursing management protocol compared with the control group indicating significant difference between the two groups after application of nursing management protocol ($P > 0.001$).

Table (5): Shows overall score of the study and control group according to patient's self-care related to caring of stoma before and immediately after & after one & half month of implementing nursing management protocol. overall total scores of caring of stoma with a mean (18.72 ± 0.98) were improved significantly in the study group after one & half months of application of nursing management protocol compared with the control group indicating significant difference between the two groups after application of nursing management protocol ($P > 0.001$).

Table (6): Shows overall percent score of the study and control group according to patient's quality of life domains before & after one & half month of implementing nursing management protocol. Concerning physical domain, the majority (76.0%) of patients in the study group, had fair in their physical domain quality of life scale, with significant differences between both groups ($P = 0.022$).

In relation to psychological health domain, more than half of patient 52.0% of study group had fair in their psychological health domain quality of life scale, while 96.0% of the patients in control group had poor psychological health domain quality of life scale, with statistical significant differences between the two groups ($P < 0.001$).

Regarding social relationships domain, the majority (84.0%) of patients of study group had fair in their social relationships domain quality of life scale and the majority (92.0%) of patients in control study had poor in their social relationships domain quality of life scale, with statistical significant differences between the two groups ($P < 0.001$).

Concerning environmental domain, most of patients (72.0%) of the study group had fair in their environmental quality of life scale, and 88.0% of the control group had poor environmental quality of life scale, with statistical significant differences between the two groups ($P = 0.001$).

Regarding overall quality of life, there was a significant difference between study and control group ($P < 0.0001$), it reveals that 64.0 % of the patients in study group reported fair total quality of life and 100% of control group reported poor quality of life.

Table (7): Shows overall mean score of the study and control group according to patient's quality of life domains before & after one & half month of implementing nursing management protocol. The mean scores for each domain of patient's quality of life, including physical health, psychological health, social relationships, and environment were improved significantly in the study group after one & half month of application of nursing management protocol and the improvement was significantly differences between the two groups in post protocol in all items ($P < 0.001$).

VI. Discussion

Patient education about bladder management after urinary diversion begins before surgery and is restarted as soon as possible after surgery. While education focuses on the patient, family members and other care providers. Any educational intervention can change patients' outcomes including knowledge, skills, attitudes, behaviors, condition or status, resulting from their involvement in a program or service. Nursing management protocol is an important and potentially powerful tool that can have beneficial effects that include improvement in patient knowledge, self-care, quality of care, cost reduction, transparency of treatment, and staff satisfaction with benefits of training and education.

In relation to age group, the present study finding revealed that the highest percentages of the study subjects were in the age group ranged from 55 to less than 65 years. These come in agreement with **Khalil (2010)** ⁽²¹⁾ who reported that, the median age for radical cystectomy was 62 years. While coming into contradiction with **Rawal et al. (2012)** ⁽²²⁾, who stated that age of radical cystectomy patients ranged from 80 to 87 years (median 82 years), and **Turk (2014)** ⁽²³⁾ who reported that the mean ages group were 73.3 ± 3.01 years, (range, 70–85 yrs.). Furthermore it is less commonly seen in those younger than 40 years of age and most commonly occurs in people between the ages of 50 to 70 years.

Concerning sex, the current study finding revealed that married males were more prevalent in the studied sample. They represent the highest percentages (84.4%) of the study group, and 80.0% of the control group. This supporting the finding by **John et al. (2010)** ⁽²⁴⁾ who reported that, 71% of radical cystectomy patients were male. Also **Krishnan et al (2016)** ⁽²⁵⁾ in his study about the fate of radical cystectomy patients after hospital discharge stated that men have higher incidence of developing urinary diversion surgery than women.

Regarding area of residence, the results of this study revealed that, the highest percentage of patients in the studied sample were from a rural area, this may be explained by poor knowledge and poor health services. Moreover, people living in rural and remote areas may have poorer health status and face greater health risk factors than people living in urban areas due to the nature of their work as a farmer. This is supported by the findings of **Gupta et al. (2014)** ⁽²⁶⁾ who found that, the majority of the studied sample was lived in rural areas.

Concerning occupation, the present study showed that most patients of the study patients were farmer workers. This is due to the fact that the sample is originally from the rural areas. This finding is contradicting with **Davies (2011)** ⁽²⁸⁾ in his study about promoting healthy aging, who reported that working was found in a high proportion among patients undergoing to urinary diversion surgery.

Also, from the point of view of the researchers this result could be because that the majority of the sample was male and they needed to work to earn money for their family. Most of them are working in agriculture so they expose to pesticides and there are associations between specific pesticides and bladder cancer. This was the same line with **Koutros et al. (2016)** ⁽²⁹⁾ who reported that in the developed world, occupational exposures are a leading cause of bladder cancer. A few studies have suggested a link between pesticide exposures among agricultural populations and bladder cancer.

Regarding the educational level, the present study revealed that illiteracy was prevailing among more than one third of patients in the study subjects. This may be related to the fact that the majority of the study subject came from rural areas with low socioeconomic status, interested in manual and farm work. It also, may be related to the association between illiteracy and unhealthy behaviors that may predispose patients to disease, especially who have low levels of education or no knowledge. This was in the same line with **Abdel-Hady E (2016)** ⁽³⁰⁾, who reported that, the highest proportion of studied patients were illiterate or read and write.

In relation to family history, the finding showed that most of the patient included in both control & study group had family history of cancer or one of their family at least had cancer, this finding is agreed with **Chalasan et al. (2012)** ⁽³¹⁾ who mentioned the Canadian bladder cancer stated that most of patients with bladder cancer and undergoing to cystectomy had a positive family history of cancers, with a percentage of 50%, which is supported by **Gillis (2013)** ⁽³²⁾ revealed that about half of the general population receive chemotherapy or radiotherapy had a positive family history of cancer and that number increase by 20%.

In relation to patients' knowledge, the results demonstrated that there were no statistical significant differences for study and control group pre implementing nursing management protocol related to patients' knowledge and it was improved among study group in post implementing nursing management protocol. This was agreement with study conducted by **Karchmer (2011)** ⁽³⁵⁾ about the impact of educational program for

patient with cancer bladder & urinary diversion, who found that the majority of the study group had unsatisfactory knowledge before implementing the educational intervention.

The current study result revealed that there was statistically significant improvement among the study than control group after implementing nursing management protocol regarding patients' knowledge about urinary bladder cancer, radical cystectomy & urinary diversion, preparing for surgery, post-operative care, the care of stoma, and home care and dangerous symptoms.

These findings come in accordance with studies conducted by **Mary et al. (2016)**⁽³⁶⁾ reported that there is a significant difference between the mean pre-test and post-test knowledge, indicating a statistically significant improvement in knowledge of the subjects after the administration of the self-instructional module in his study about effectiveness of a self-instructional module on knowledge regarding rehabilitation among patients with ileal conduit. Furthermore, **Mona, (2014)**⁽³⁷⁾ in her study at Banha university mentioned that self-care learning package have positive effect on quality of life for patient with different types of urinary diversion and the main score of knowledge and practice improved significantly after application of self-care learning package.

Concerning to radical cystectomy patient's self-care skills, the results showed that there were no statistically significant differences between the study and control group regarding self-care skills pre-application of nursing management protocol while there were highly statistically significant difference between them at post an application of nursing management protocol. This may be explained by the fact that creating an educational support program for patients after surgery may increase adaptation, and help the patient to improve self-care.

This finding in agreement with **Abo Alizm (2010)**⁽³⁸⁾ in her study about the effect of stoma care on quality of Life of patients after radical cystectomy showed that the multimedia packages can improve the involvement of the patient for the care with ostomy, with improvement of the capacity for self-care . In contrast **kyle (2017)**⁽³⁹⁾ showed that, there was no association found between intervention and control group or within the intervention group with respect to self-care; in other words, no statistically significant associations were noted between the intervention and independence with self-care skills.

Patient's self-care related to overall functional mobility & activities, the current study findings revealed that overall total scores of functional mobility & activities, were improved significantly in the study group immediately after application nursing management protocol indicating significant difference between the two groups after application of nursing management protocol.

This was agreement with study conducted by **Thomas et al. (2013)**⁽⁴⁰⁾ about self-care practice on patient implementation of the Exeter enhanced recovery program for patients undergoing radical cystectomy, who founded that the introduction of the Exeter enhanced recovery described for patients undergoing radical cystectomy has been safe and led to patient benefits including early feeding, early mobilization and more rapid discharge from hospital.

Patient's self-care related to caring of stoma, the result indicates that there were unsatisfactory self-care skills related to caring of stoma about urinary diversion for both study and control group pre application of nursing management protocol and it was improved among study group during post and follow up phase after application of nursing management protocol. In the same line **Shah et al. (2015)**⁽⁴¹⁾ in his study in California pointed that most of patient undergoing urinary diversion had unsatisfactory self-care practical skills , this due to patients are ideally admitted to hospital 1- 2 days before surgery.

Moreover, this finding was in agreement with **Harby (2010)**⁽⁴²⁾ in his cross section study that reveled inconsistency and deficiency in knowledge, attitude and self-care practice among the patients with urinary

diversion. The patient had adequate level of knowledge about urinary diversion after health professional education and training, but their attitude toward the disease and their self-care skills was not adequately favorable.

It can summarize that patient education begins before surgery and continues after hospital discharge until the individual can perform self-care skills to maximum skills ability. Its importance of health professionals' role in helping patients adjusts preoperatively and postoperatively and accepts the presence of a stoma. Health professionals need to be aware of the physical, psychological, and social impact of stoma on patients in the initial 30-day postoperative period.

Concerning to quality of life relation to general health, the current study revealed there were significant differences between study and control group in overall health domain included rate of quality of life and satisfied with health. More than half of patients had fair overall health in study group after one and half month, while only a few patients in control group had fair overall health. In the same line with **Toktas (2002)**⁽⁴³⁾ about When Should Quality of Life be Measured after Radical Cystectomy, reported that there was statistical analysis between the control and study group for general health status even at the early post-operative period. Moreover, **Mona (2014)**⁽³⁷⁾ in her study about Impact on the quality of life for Patients undergoing urinary diversion, reported that highly statistically significant improvement in general health of studied subjects with ileal loop conduit and orthotopic ileal neobladder that highlighted by decreasing complaint of them from late complications.

This finding in contrast with **Catharina (2014)**⁽⁴⁴⁾ in her study about patients–reported outcomes for patients undergoing radical cystectomy: prospective case – control study stated that there was no statistical differences were found for general QoL and the four QoL domains and remained stable over time.

Concerning physical domain, the current study revealed there were significant differences between study and control group in physical domain included pain, medical treatment, energy &fatigue, sleep &rest, daily living activities, and work capacity. The results indicate that there was improvement of physical quality of life after application of nursing management protocol. Nursing management protocol was created to reduce the physical and emotional stress for patients undergoing major surgical interventions.

This finding is agreed with **Janet (2017)**⁽⁴⁵⁾ in his study about enhanced recovery after surgery, radical cystectomy and urinary diversion, stated that enhanced recovery after surgery pathways were reduce the physical and emotional stress for patients undergoing major surgical interventions. Moreover, this result is supported by **Catharina (2014)**⁽⁴⁴⁾ who reported that the domain physical health showed a clinically relevant difference of between the two groups, indicating that at baseline, the physical health was lower for the patients who later appeared to have bladder cancer.

In relation to psychological health domain, the results revealed that more than half of patient of study group had fair in their psychological health domain quality of life scale, while most of the patients in control group had poor psychological health domain quality of life scale included positive feelings, negative feelings, Spirituality, religion and personal beliefs, thinking, learning, memory and concentration, bodily image and appearance and self-esteem, indicating a statistically significant improvement in psychological health domain quality of life of the study group after the administration of the nursing management protocol.

This finding is agreed with **Palapattu (2004)**⁽⁴⁶⁾ in his study about assessment of perioperative psychological distress in patients undergoing radical cystectomy for bladder cancer, reported that there was a statistically significant decrease in general distress, depression and anxiety indicating that the identification of psychological distress in this population has the potential to influence health related quality of life as well as recovery in all individuals with bladder cancer.

Moreover, **Pranav Sharma (2016)** ⁽⁴⁷⁾ stated that mental composite score was a significant predictive variable when added to present expert model and therefore, patient self-assessment of psychological health status before surgery through validated questionnaires may provide additional information useful in predicting short-term postoperative outcomes. Also, **Andrea et al. (2014)** ⁽⁴⁸⁾ reported that the intervention group increased walking distance and role physical domain more than the control group; the intervention group had continued increasing walking distance and physical domain. While coming into contradiction with **Anaraki et al. (2012)** ⁽⁴⁹⁾ in his study about Quality of life outcomes in patients living with stoma, reported that the psychological implications after stoma surgery, had feelings of depression.

Regarding social relationships domain, the result revealed that there were statistically significant difference between the mean and standard deviation regarding patients' social relationships domain quality of life scale about urinary diversion in study and control groups at post and post one and half month of implementing nursing management protocol which included personal relationships, sexual activity, and social support. It seems that social support is a beneficial factor for personal relationships, sexual activity, and social support. Many patients suffer from their sexual dysfunction after radical cystectomy. Body alterations associated with urinary diversion and resulting changes in body image, emotional and psychological responses of patients and their partners, as well as social concerns and stigma associated with urinary diversion may impair sexuality and sexual satisfaction, and strain intimate relationships.

This finding is agreed with **Yang (2013)** ⁽⁵⁰⁾ in his study about impact of invasive bladder cancer and orthotopic urinary diversion on general health-related quality of life, stated that the social functioning and mental health scores in the experimental group were significantly higher compared to those in the control group ($P < 0.05$) and the QOL score in the experimental group was higher compared to the control group.

In the same line **Large (2010)** ⁽⁵¹⁾ using the validated functional assessment of cancer therapy-Vanderbilt cystectomy index, reported that women undergoing radical cystectomy or Indiana Pouch reconstruction had no differences for physical, social, emotional, functional and cystectomy-specific health-related quality of life domains.

Concerning environmental domain the current study revealed there were significant differences between study and control group in environmental domain included Freedom, physical safety and security, Physical environment (pollution/noise/traffic/climate), financial resources, Opportunities for acquiring new information and skills, participation in and opportunities for recreation/leisure activities, home environment, health and social care.

This finding is agreed with **Aazam et al. (2011)** ⁽⁵²⁾ about health-related quality of life, stated that there were improvement in the physical and environmental stress for patients undergoing radical cystectomy with urinary diversion. However, our findings may still be useful for health care providers when creating a supportive environment to improve quality of life in ostomy patients.

The results revealed that there were no statistical significant between patient's sex, age, area of residence, marital status, occupation, educational level, and socioeconomic status and their total quality of life related to radical cystectomy with urinary diversion. In the same line with **Lingyun et al. (2016)** ⁽⁵³⁾ who reported that there is no significant differences were found in the gender, age, education level, and occupation type in QoL scale among the groups.

Finally, this study emphasizes the role of integrating education in a management of radical cystectomy patients by all health professionals with including nurse, where acquiring knowledge and skills can lead to changes in human behavior that are necessary for the maintenance or improvement of health. The goal of the patient teaching is for the patient to transfer the information presented and the skill practiced to everyday life.

Patient education is the single most important action toward independence, confidence & rehabilitation for the patient. Teaching cannot be left to chance. Teaching should be approached in an organized manner, underpinned by sound principles of teaching and learning using teaching plans where appropriate to ensure that no vital aspects are omitted.

So, depending on the previous data, evaluating the effect of nursing management protocol of knowledge, self-care skills and quality of life regarding the radical cystectomy with urinary diversion will help the nursing personnel enhance patients' awareness and takes proper precautions to prevent the occurrence of disease, to reduce the morbidity and mortality rate caused by renal stone and its complications and to follow necessary prevention strategy.

Therefore, from the result of the present study it can be said that, implementation of nursing management protocol for radical cystectomy with urinary diversion patients, proved to be effective in improving patients' knowledge, self-care skills and quality of life.

VII. Conclusion

In the preoperative period, the majority of the studied subjects in both study and control groups, had an insufficient level of knowledge, low level of self-care skills and poor quality of life about radical cystectomy with urinary diversion. Applying the nursing management protocol had statistically significant improvement on knowledge, self-care skills and quality of life for studied patients undergoing radical cystectomy with urinary diversion postoperatively than their controls.

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Table (1): Frequency distribution of the study and control group according to their socio-demographic characteristics

socio-demographic	Study (n = 25)		Control (n = 25)		χ ²	p
	No.	%	No.	%		
Sex						
Male	21	84.0	20	80.0	0.136	F _E p= 1.000
Female	4	16.0	5	20.0		
Age						
35 - < 45 years	1	4.0	1	4.0	5.298	M _C p= 0.107
45- < 55years	3	12.0	3	12.0		
55- < 65years	17	68.0	10	40.0		
≥ 65 years	4	16.0	11	44.0		
Area of residence						
Rural	19	76.0	18	72.0	4.298	M _C p= 0.414
Urban	6	24.0	7	28.0		
Marital status						
Married	25	100.0	21	84.0	3.597	M _C p= 0.114
Divorced	0	0.0	2	8.0		
Widow	0	0.0	2	8.0		
Occupation						
Worker	11	44.0	6	24.0	2.426	M _C p= 0.524
Clerical	1	4.0	2	8.0		
Housewife	4	16.0	5	20.0		
Retired	9	36.0	12	48.0		
Educational level						
Illiterate	14	56.0	12	48.0	2.419	M _C p= 0.496
Read & write	2	8.0	5	20.0		
Primary	3	12.0	1	4.0		
Secondary	6	24.0	7	28.0		
Socioeconomic status						
Low	19	76.0	15	60.0	1.471	0.225
Medium	6	24.0	10	40.0		
High	0	00.0	0	00.0		

χ², p: χ² and p values for **Chi square test** for comparing between the two groups

M_Cp: p value for **Monte Carlo** for Chi square test for comparing between the two groups

F_Ep: p value for **Fisher Exact** for Chi square test for comparing between the two groups

*: Statistically significant at p ≤ 0.05

Table (2): Frequency distribution of the study and control group according to patient's clinical data

patient's clinical data	Study (n = 25)		Control (n = 25)		χ ²	p
	No.	%	No.	%		
Patient's past medical history						
Chronic diseases						
DM	13	52.0	13	52.0	1.941	MC p= 0.626
IHD	1	4.0	2	8.0		
DM+IHD	6	24.0	8	32.0		
Nothing	5	20.0	2	8.0		
Previous hospitalization						
Yes	17	68.0	20	80.0	0.936	0.333
No	8	32.0	5	20.0		
Previous surgery						
Yes	13	52.0	17	68.0	1.333	0.248
No	12	48.0	8	32.0		
Prescribed medications after surgery						
Analgesics	1	4.0	0	0.0	2.751	MC p= 0.236
Others	2	8.0	0	0.0		
Analgesics +Antibiotics	22	88.0	25	100.0		
Over counter medications						
No	25	100.0	25	100.0	-	-
Family history						
Cancer	5	20.0	4	16.0	9.010*	MC p= 0.040*
Diabetes	6	24.0	10	40.0		
Hypertension	1	4.0	0	0.0		
DM & HTN	6	24.0	0	0.0		
Nothing	7	28.0	11	44.0		
Present clinical data						
Onset of his disease						
≤ 1 year	19	76.0	20	80.0	0.117	0.733
> 1 to 5 years	6	24.0	5	20.0		
Signs& symptoms of disease						
Blood in urine	6	24.0	2	8.0	13.400*	MC p= 0.004*
Frequent urination	3	12.0	0	0.0		
Burning during urination	7	28.0	5	20.0		
Having trouble urinating	1	4.0	0	0.0		
Blood+ frequent urination +burning +loss of appetite	8	32.0	18	72.0		
Medical diagnosis						
Bladder cancer	25	100.0	25	100.0	-	-
Prescribed medication post-surgery						
Analgesics +antibiotics + anticoagulants	25	100.0	25	100.0	-	-

χ², p: χ² and p values for **Chi square test** for comparing between the two groups

^{MC}p: p value for **Monte Carlo** for Chi square test for comparing between the two groups

^{FE}p: p value for **Fisher Exact** for Chi square test for comparing between the two groups

*: Statistically significant at p ≤ 0.05

Figure (1): Frequency distribution of the study and control group according to patient's knowledge before and immediately after implementing nursing management protocol

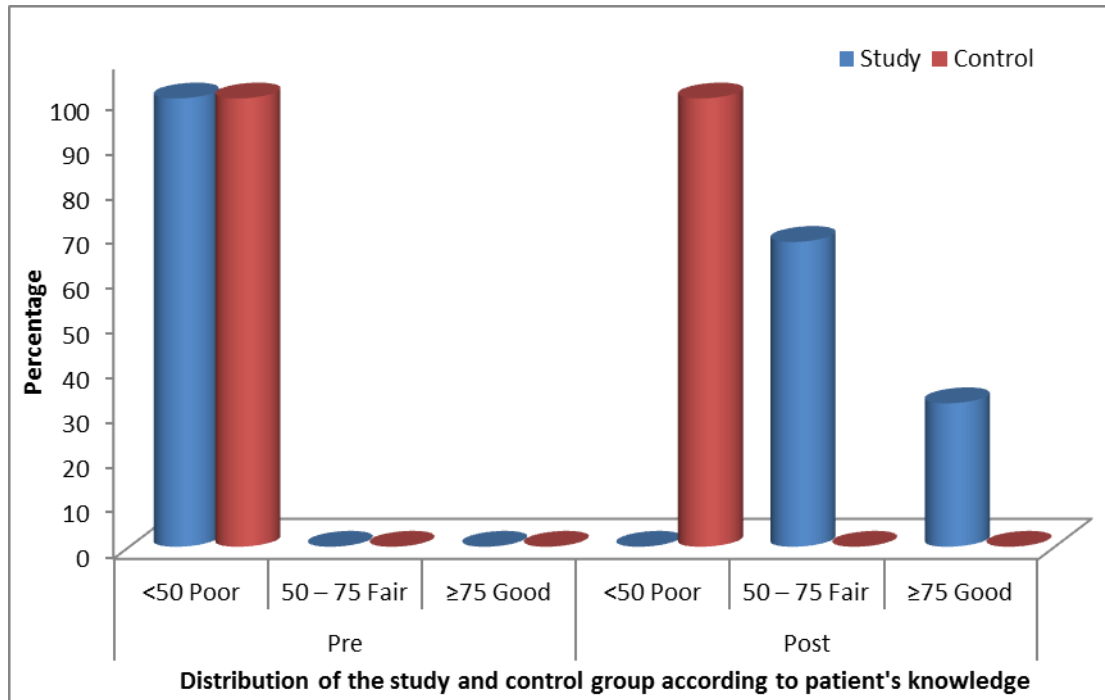


Table (3): Mean scores of patients' knowledge in the study and control group before and immediately after implementing nursing management protocol

patients' knowledge	Study (n = 25)			Control (n = 25)			P ₁	P ₂
	Pre	Post	p	Pre	Post	p		
Urinary bladder cancer								
Min. – Max.	0.0 – 2.0	0.0 – 4.0	<0.001*	0.0 – 2.0	0.0 – 2.0	0.022*	1.000	<0.001*
Mean ± SD.	0.44 ± 0.65	2.12 ± 0.93		0.44 ± 0.65	0.24 ± 0.60			
Radical cystectomy and urinary diversion								
Min. – Max.	2.0 – 5.0	4.0 – 6.0	<0.001*	2.0 – 6.0	2.0 – 6.0	0.161	1.000	<0.001*
Mean ± SD.	3.60 ± 0.87	5.44 ± 0.71		3.84 ± 1.18	3.92 ± 1.15			
Preparing for surgery								
Min. – Max.	0.0 – 2.0	1.0 – 3.0	<0.001*	0.0 – 2.0	0.0 – 2.0	-	1.000	<0.001*
Mean ± SD.	1.12 ± 0.78	2.48 ± 0.59		1.12 ± 0.78	1.12 ± 0.78			
Post- operative care								
Min. – Max.	0.0 – 3.0	0.0 – 6.0	<0.001*	0.0 – 3.0	0.0 – 4.0	0.212	1.000	<0.001*
Mean ± SD.	1.60 ± 0.96	4.28 ± 1.57		1.60 ± 0.96	1.44 ± 0.96			
Caring of stoma								
Min. – Max.	2.0 – 6.0	7.0 – 8.0	<0.001*	2.0 – 6.0	2.0 – 6.0	0.161	1.000	<0.001*
Mean ± SD.	3.84 ± 1.18	7.60 ± 0.50		3.84 ± 1.18	3.92 ± 1.15			
Home care and dangerous symptoms after discharge								
Min. – Max.	0.0 – 5.0	3.0 – 4.0	<0.001*	0.0 – 5.0	0.0 – 5.0	-	1.000	<0.001*
Mean ± SD.	2.44 ± 1.16	3.60 ± 0.50		2.44 ± 1.16	2.44 ± 1.16			
Overall knowledge								
Min. – Max.	9.0 – 16.0	20.0 – 30.0	<0.001*	9.0 – 16.0	9.0 – 17.0	0.166	1.000	<0.001*
Mean ± SD.	13.04±2.11	25.52 ±2.29		13.04±2.11	12.76 ±1.92			

p: p value for **Paired t-test** for comparing between pre and post in each group

p₁: p value for **Student t-test** for comparing between the two groups in pre

p₂: p value for **Student t-test** for comparing between the two groups in post

*: Statistically significant at p ≤ 0.05.

Table (4): Overall score of the study and control group according to patient's self-care related to functional mobility & activities before & immediately after implementing nursing management protocol

Functional mobility and activities	Study (n = 25)		Control (n = 25)		p ₁	p ₂
	Pre	Post	Pre	Post		
Functional mobility and activities						
Total score						
Min. – Max.	6.0 – 11.0	16.0 – 20.0	6.0 – 11.0	5.0 – 11.0		
Mean ± SD.	8.20 ± 1.38	17.88 ± 1.27	8.48 ± 1.45	8.96 ± 1.34		
Percent score					0.488	<0.001*
Min. – Max.	28.57–52.38	76.19–95.24	28.57–52.38	23.81–52.38		
Mean ± SD.	39.05 ± 6.59	85.14 ± 6.04	40.38 ± 6.89	42.67 ± 6.37		

p₁: p value for **Student t-test** for comparing between the two groups in pre

p₂: p value for **Student t-test** for comparing between the two groups in post

*: Statistically significant at $p \leq 0.05$

Table (5): Overall score of the study and control group according to patient's self-care related to caring of stoma before and immediately after & after one & half month of implementing nursing management protocol

Caring of stoma	Study (n = 25)			Control (n = 25)			P ₁	P ₂
	Pre	Post	Post 1.5month	Pre	Post	Post 1.5month		
Total score								
Min. – Max.	0.0 – 4.0	15.0 – 18.0	17.0 – 20.0	0.0 – 4.0	0.0 – 5.0	0.0- 6.0		
Mean ± SD.	1.72 ± 1.31	16.80 ± 1.0	18.72 ± 0.98	1.84 ± 1.28	2.64 ± 1.75	6.64 ± 2.13		
Percent score							0.744	<0.001*
Min. – Max.	0.0 – 19.05	71.43–85.71	80.95 – 95.24	0.0 – 19.05	0.0 – 23.81	0.0 – 25.81		
Mean ± SD.	8.19 ± 6.23	80.0 ± 4.76	89.14 ± 4.67	8.76 ± 6.10	12.57 ± 8.35	15.57 ± 9.65		

^tp: p value for **Paired t-test** for comparing between pre and post in each group
p₁: p value for **Student t-test** comparing between study and control group in pre
p₂: p value for **Student t-test** comparing between study and control group in post
*: Statistically significant at p ≤ 0.05

Table (6): Overall percent score of the study and control group according to patient’s quality of life domains before & after one& half month of implementing nursing management protocol

Quality of life domains	Study (n = 25)					Control (n = 25)					P ₁	P ₂
	Pre		Post 1.5 months		p	Pre		Post 1.5 months		p		
	No.	%	No.	%		No.	%	No.	%			
General Health												
<50% poor	22	88.0	6	24.0	<0.001*	22	88.0	21	84.0	0.083	F _E p=1.000	M _C p<0.001*
50 - <75 fair	3	12.0	14	56.0		3	12.0	4	16.0			
≥75% good	0	0.0	5	20.0		0	0.0	0	0.0			
Physical Health												
<50% poor	25	100.0	6	24.0	<0.001*	25	100.0	25	100.0	0.423	F _E p=1.000	F _E p=0.022*
50 - <75 fair	0	0.0	19	76.0		0	0.0	0	0.0			
Psychological Health												
<50% poor	25	100.0	12	48.0	<0.001*	25	100.0	24	96.0	0.161	F _E p=1.000	<0.001*
50 - <75 fair	0	0.0	13	52.0		0	0.0	1	4.0			
Social Relationships												
<50% poor	23	92.0	2	8.0	<0.001*	23	92.0	23	92.0	0.161	F _E p=1.000	M _C p<0.001*
50 - <75 fair	2	8.0	21	84.0		2	8.0	2	8.0			
≥75% good	0	0.0	2	8.0		0	0.0	0	0.0			
Environment												
<50% poor	23	92.0	7	28.0	<0.001*	23	92.0	22	88.0	0.212	F _E p=1.000	<0.001*
50 - <75 fair	2	8.0	18	72.0		2	8.0	3	12.0			
Overall												
<50% poor	25	100.0	9	36.0	<0.001*	25	100.0	25	100.0	0.161	F _E p=1.000	<0.001*
50 - <75 fair	0	0.0	16	64.0		0	0.0	0	0.0			

^{FE}p: p value for **Fisher Exact** for Chi square test

p: p value for **Paired t-test** for comparing between pre and post in each group

p₁: p value for comparing between the two groups in pre

p₂: p value for comparing between the two groups in post

*: Statistically significant at p ≤ 0.05

Table (7): Overall mean score of the study and control group according to patient's quality of life domains before & after one& half month of implementing nursing management protocol

Mean Score	Study (n = 25)			Control (n = 25)			P ₁	P ₂
	Pre	Post 1.5 months	p	Pre	Post 1.5 months	p		
General Health								
Min. – Max.	25.0 – 62.50	25.0 – 75.0	<0.001*	25.0 – 62.50	25.0 – 62.50	0.083	1.000	<0.001*
Mean ± SD.	30.50 ± 10.26	53.0 ± 14.11		30.50 ± 10.26	34.0 ± 11.70			
Physical Health								
Min. – Max.	17.86 – 46.43	39.29 – 53.57	<0.001*	17.86 – 46.43	21.43 – 46.43	0.423	1.000	<0.001*
Mean ± SD.	28.71 ± 7.40	45.86 ± 4.34		28.71 ± 7.40	33.29 ± 6.97			
Psychological Health								
Min. – Max.	25.0 – 45.83	25.0 – 62.50	<0.001*	25.0 – 45.83	25.0 – 50.0	0.161	1.000	<0.001*
Mean ± SD.	33.33 ± 4.96	48.17 ± 9.85		33.33 ± 4.96	37.67 ± 6.31			
Social Relationships								
Min. – Max.	25.0 – 58.33	33.33 – 75.0	<0.001*	25.0 – 58.33	25.0 – 58.33	0.161	1.000	<0.001*
Mean ± SD.	35.33 ± 8.43	59.0 ± 9.90		35.33 ± 8.43	35.33 ± 8.43			
Environment								
Min. – Max.	25.0 – 50.0	37.50 – 62.50	<0.001*	25.0 – 50.0	28.13 – 50.0	0.212	1.000	<0.001*
Mean ± SD.	36.75 ± 7.72	50.38 ± 7.35		36.75 ± 7.72	39.50 ± 6.92			
Overall								
Min. – Max.	27.88 – 45.19	38.46 – 56.73	<0.001*	27.88 – 45.19	31.73 – 47.12	0.161	1.000	<0.001*
Mean ± SD.	33.85 ± 3.67	49.85 ± 4.01		33.85 ± 3.67	36.50 ± 3.95			

p: p value for **Paired t-test** for comparing between pre and post in each group

p₁: p value for **Student t-test** for comparing between the two groups in pre

p₂: p value for **Student t-test** for comparing between the two groups in post

*: Statistically significant at p ≤ 0.05