

## Functional impairment of Bladder Cancer Patients Post Radical Cystectomy and Urinary Diversion Procedure: A Correlational Study

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**Abstract:** Bladder cancer is a life threatening disease; it is a condition of long –term duration, not curable and having many residual features that impose limitations on individual’s functional capabilities. Radical cystectomy is the standard treatment for patients with muscle – invasive bladder cancer, it means the total removal of the bladder, there is no doubt that any urinary diversion post radical cystectomy constructed with an impact on patient’s future life and might change the activity of daily functional status. There for This study aimed at study the functional impairment post radical cystectomy operation as an indicator of the prognosis in individual patients. A cross-sectional descriptive correlational design was used for the current study using Karnovsky Performance Index, this tool is employed to assess patient's health status in relation to physical activity performance for 100 bladder cancer patients and post radical cystectomy at one of the eight Cancer Institute affiliated to Ministry of Health, in Egypt. The results of this study revealed a deterioration of the functional status of the patients 3&6 months postoperatively and a statistical significance difference was observed between ages, marital status, having children with the functional status of the patients.

**Conclusion and recommendations:** it is concluded that functional status of the patients post radical cystectomy decreased 3, 6 months post-operative, and patient more than 50 years, married & the patients having children were both need care taker and hospitalization, the recommendation of this study is to use a larger sample size and different settings in a further research to ensure generalization and viability of the results

**Keywords:** bladder cancer, radical cystectomy, urinary diversion, Karnovsky performance index.

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### I. Introduction

Cancer diagnosis is often perceived as a traumatic event that changes an individual’s basis assumption about the self as effective and powerful<sup>(1)</sup>. In spite of the technological advances nowadays, cancer still cause the patient to feel much suffer, terrible pain and dying before their hopes and goals in life achieved. Bladder cancer is a life threatening disease; it is a condition of long –term duration, not curable and having many residual features that impose limitations on individual’s functional capabilities<sup>(1)</sup>. Bladder cancer in Egypt constitutes 30% of all cancers cases treated in Egyptian Cancer Institute in Egypt , affecting mainly males due to bilharisiasis (schistosomiasis) that is endemic in the branches of Nile River<sup>(2)</sup>.

Radical cystectomy is the standard treatment for patients with muscle – invasive bladder cancer, it means the total removal of the bladder :In men , it includes removal of the bladder , prostate and seminal vesicles , while in women this surgery include removal of the bladder ,urethra ,uterus and the anterior wall of the vagina . In both men and women, the pelvic lymphnodes are dissected for pathological evaluation .Once a cystectomy is performed urine must be diverted to another collecting system, which is called urinary diversion procedure<sup>(3)</sup>.

It is well known that oncological surgery in the pelvis is associated with physical dysfunction and limitations<sup>(4)</sup>, in which physical functions has been viewed as interrelated area of physical performance as muscular strength, range of motion and cardiopulmonary endurance<sup>(5)</sup>. moreover, there is no doubt that any urinary diversion post radical cystectomy constructed with an impact on patient’s future life and might change the activity of daily functional status<sup>(6)</sup>. In the context of bladder cancer, morbidity associated with the disease and its treatment can lead to impairment in physiological, psychological or behavioral attributes potentially leading to limitations in ability to perform tasks and participation in social demands<sup>(7)</sup>. In addition, it well known there is a positive relationship between health status and physical activity means that, the better the level of activity the better the health and vice versa<sup>(8)</sup>. Despite there are many previous studies that investigate the quality of life of bladder cancer patient post radical cystectomy<sup>(9)</sup>. there is no researches that studied the effect of this major oncological surgery on the physical function of the patient. So, this study aimed at study the functional impairment of the bladder cancer patients post radical cystectomy operation as an indicator of the prognosis in individual patients.

**Aim of the study**

This study aimed at study the functional impairment of bladder cancer patients post radical cystectomy operation as an indicator of the prognosis in individual patients.

**Methodology**

**Research design:** a cross-sectional descriptive correlational design was used for the current study

**Setting**

The study was conducted at one of the eight Cancer Institutes affiliated to Ministry of Health, in Egypt.

**Subjects of the study:**

Convenient sample of 100 adult patients who fulfill the following criteria:-

- Age ranging from 40 -65 years.
- Patients diagnosed as bladder cancer and scheduled for total cystectomy and urinary diversion operation.
- Free from any associated chronic condition that can affect the physical activity as cerebrovascular accident (CVA) or bone diseases.
- Conscious, able to communicate & agree to participate in the study.

**Tools of the study:**

**One** tool was used in the current study, it consists of two parts:

**Part one:** is the patient’s profile regarding sociodemographic characteristics as: age, sex, marital status, education, residency and presence of children

**Part two:**is The Karnovsky performance index <sup>(10)</sup>, this tool is employed to assess patient's health status in relation to physical activity performance. The index consists of ten questions, which are answered on a rating scale of 0-100. The score of 80 and more indicate patients rehabilitated, 70-79 indicate self-care only 40-69 indicate patients requires caretaker and 1-39 indicate that patients require institutionalization or hospitalization. But in this study the first and second categories of the tool (rehabilitated /self-care only) were collected together in one category to facilitate interpretations of the results.

**Filed work**

- 1- Official permission to carry out the study from the responsible authoritative was obtained.
- 2- Patients included in the study were identified using the selection criteria.
- 3- Patients consent was obtained to participate in the study after explaining the aim of study and complete disclosure of the study was assured.
- 4- Karnovsky Performance Index used to collect the basic and general data.
- 5- Data collection: Data was collected within 12 month's period in the Cancer Institute, from beginning of December 2014 to the end of December 2015. Patient’s selection was done in accordance with the pre-determined sample selection criteria
- 6- the tool of the study was administered 3 times individually to patients by the researcher: 1-During the pre-operative period to establish an entry baseline data. 2-Three months after surgery. 3-Six months after surgery

**Statistical Analysis:**

The collected data was organized, tabulated and statistically analyzed using SPSS software statistically computer package version 18. The number and percent distribution was calculated chi-square was used as a test of significant at P < 0.05 for interpretation of result.

**Ethical Consideration:**

The pertinent research and ethical committees and all the legal guardians of the patients approved the study protocol. Either verbally or written permission was obtained from every patient before participating in the study. No hazards were present. Participants were assured of confidentiality,. Data were only available to the researchers and participants and all patients were informed that they have the right to withdraw from the study at any time

**II. Results of the Study**

**Table(I):** Socio-demographic Characteristics of the studied patients in relation to sex.

Variables	Sex					
	Males		Females		Total	
	n=61		n=39		N=100	
	n	%	n	%	n	%
<i>Age in years:</i>						
-<50	17	27.9	18	46.2	35	35.0
- >50	44	72.1	21	53.8	65	65.0
<i>Residence:</i>						
- Urban	17	27.9	17	43.6	34	34.0

- Rural	44	42.1	22	56.4	66	66.0
<b>Education:</b>						
- Illiterate or read and write	41	67.2	26	66.7	67	67.0
- Primary & secondary	15	24.6	13	33.3	28	28.0
- University	5	8.2	0	0.0	8	8.0
<b>Occupation:</b>						
- Professional.	15	24.5	5	12.8	20	20
- Skilled worker.	10	16.3	-	-	10	10
- Unskilled worker.	10	16.3	-	-	10	10
- Farmer.	40	65.6	20	51.2	60	60
<b>Marital status:</b>						
- Single	8	13.1	6	15.4	14	14.0
- Married	36	59.0	17	43.6	53	53.0
-Divorced	1	1.6	2	5.1	3	3.0
-Widow	16	26.2	14	35.9	30	30.0
<b>Having children:</b>						
-Yes	43	70.5	24	61.5	67	67.0
- No	18	29.5	15	38.4	33	33.0

**Table 1:** Socio-demographic Characteristics of the studied patients in relation to sex. This table illustrates that 61 % of the total sample were male, while 65 % were among the aged group less than or equal 50 years. The majority of the sample 66 % were resident of rural areas, while 34 % of the sample were from urban. In relation to education, 67 % of the patients were illiterate or read and write regarding the occupation, 60% were farmers, while 53 % were married, and 67.6 % of the total sample have children.

**Table (2)** Karnovsky Performance Index among studied patients pre-operatively, 3&6 months postoperatively.

Period of assessment	No	%
<b>Preoperative</b>		
Rehabilitated & self-care only	98	98
Need for care taker	2	2
Need for hospitalization	0	0
<b>3 Months postoperative</b>		
Rehabilitated & self-care only	66	66
Need for care taker	34	34
Need for hospitalization	0	0
<b>6 Months postoperative</b>		
Rehabilitated & self-care only	42	42
Need for care taker	45	45
Need for hospitalization	13	13

**Table 2 :** Karnovsky Performance Index among studied patients pre-operatively, 3&6 months postoperatively, it can be easily noticed that the level of performance of those patients deteriorated across the time through the data presented in the above table which indicate that majority of the patients (98%) were rehabilitated and self-care only preoperatively, which this percentage decreased by the time to be (66%, 42%) 3 and 6 months postoperatively respectively, while the percentage of the patients that need hospitalization increased from 0% in both preoperatively and 3 months post-operative to be 13% 6 months postoperatively

**Table (3):** Karnovsky Performance Index among studied patients pre-operatively in relation to the patient’s variables.

Patient’s variables	Karnovsky Performance Index						X <sup>2</sup>	P
	Preoperative							
	Rehabilitated & self-care only		Need for care taker		Need for hospitalization			
No	%	No	%	No	%			
1- Age: <50	35	100	0	0	0	0	5.099	0.024*

▪	≥50	63	96.5	2	3.1	0	0		
2-	Sex:								
▪	Male	60	98.4	1	1.6	0	0	0.030	0.863
▪	Female	38	97.5	1	2.5	0	0		
3-	Residence:								
▪	Rural	65	98.5	1	1.5	0	0	2.440	0.118
▪	Urban	33	97.1	1	2.9	0	0		
4-	Education :								
▪	Illiterate or read&write	65	97	2	3	0	0	0.211	0.647
▪	Literate	33	97.1	0	0	0	0		
5-	Marital status:								
▪	Married	45	95.7	2	2.5	0	0	38.787	0.001*
▪	Unmarried	53	100	0	0	0	0		
6-	Having children :								
▪	Yes	65	97	2	3	0	0	0.914	0.339
▪	No	33	100	0	0	0	0		

**Table 3: Karnoversky Performance Index among studied patients preoperatively.** In the preoperative period, this table shows that there was a statistical significant differences between functional status, age and marital status P = 0.024 and 0.001 respectively. Unmarried patients and patients who aged less than 50 years were rehabilitated and self-cared.

**Table (4): Karnovesky Performance Index among studied patients 3 months postoperative in relation to the patient’s variables.**

Patient’s variables	Karnovesky Performance Index							
	Preoperative							
	Rehabilitated & self-care only		Need for care taker		Need for hospitalization		X <sup>2</sup>	P
	No	%	No	%	No	%		
1- <u>Age:</u>								
▪ <50	19	54.3	16	45.7	0	0	3.239	0.070
▪ ≥50	47	72.3	18	27.7	0	0		
2- <u>Sex:</u>								
▪ Male	42	68.8	19	31.3	0	0	0.567	0.451
▪ Female	24	61.5	15	38.5	0	0		
3- <u>Residence:</u>								
▪ Rural	44	66.7	22	33.3	0	0	0.038	0.845
▪ Urban	22	64.7	12	38.5	0	0		
4- <u>Education :</u>								
▪ Illiterate or read & write	46	68.7	21	31.3	0	0	0.639	0.424
▪ Literate	14	42.4	13	39.4	0	0		
5- <u>Marital Status</u>								
▪ Married	27	57	20	42.6	0	0	9.265	0.002
▪ Unmarried	39	73.6	14	26.4	0	0		
6- <u>Children:</u>								
▪ Yes	51	76.1	16	23.9	0	0	9.265	0.002*
▪ No	15	45.5	18	54.5	0	0		

**Table 4:** Shows karnovesky performance Index 3 months postoperative , data presented in this table reveals that there is a statistical significant difference between the functional status and the presence of children (P=0.002). The patients having children need for caretaker.

**Table (5): Karnovesky Performance Index among studied patients 6 months postoperative in relation to the patient’s variables.**

Patient’s variables	Karnovesky Performance Index							
	Preoperative							
	Rehabilitated & self-care only		Need for care taker		Need hospitalization for		X <sup>2</sup>	P
	No	%	No	%	No	%		
1- <u>Age:</u>								
▪ <50	16	45.7	12	34.3	7	20.0	3.239	0.070
▪ ≥50	26	40.0	33	50.8	6	9.2		
2- <u>Sex:</u>								

▪ Male	27	44.3	30	49.2	4	6.6	0.329	0.567
▪ Female	15	38.5	15	38.5	9	23.1		
3- Residence:								
▪ Rural	28	42.4	32	48.5	6	9.1	0.014	0.905
▪ Urban	14	41.1	13	38.2	7	20.6		
4- Education								
▪ Illiterate or read & write	28	41.8	32	47.8	7	10.4	0.004	0.250
▪ Literate	14	42.4	13	39.4	6	18.2		
5- Marital Status								
▪ Married	14	29.8	22	46.8	11	23.4	0.598	0.005
▪ Unmarried	28	52	23	43.4	0	3.8		*
6- Children:								
▪ Yes	32	47.8	30	44.8	5	7.5	2.766	0.096
▪ No	10	30.3	15	45.5	8	24.2		

**Table 5:** Illustrates the level of performance according to Karnovsky performance index 6 months postoperative the table shows that there is a statistical significant difference between the functional status and the marital status (P=0.005). Married patients were need for caretaker, while the unmarried group were still rehabilitated and self-cared.

### III. Discussion

Invasive urinary bladder cancer is an aggressive form with a five-year survival rate reported in 66%-68% of male and 58%-66% in female<sup>(11)</sup>. High level of physical activity and performance is considered as a predictor of long survival in those patients<sup>(12)</sup>. Therefore, this study was conducted to study the functional impairment post radical cystectomy and urinary diversion operation as an indicator of the prognosis in individual patients. The findings of this study denoted that the majority of patient were male and over the age of 50 years. This findings is in line with **Faysal et al**<sup>(13)</sup>, who stated that bladder cancer mainly affect men more than women, 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. Most of the patients in the present study were married and had children, this is because the age of occurrence for bladder cancer is above 40 years, and it is less common to find persons in this age group unmarried. The majority of the included sample were illiterate farmers, this is because the sample is originally from the rural areas.

The results of the current study revealed that, level of performance of those patients deteriorated across the time, majority of the patients were rehabilitated and self-cared only preoperatively, which this Percentage decreased by the time to be near to one third 6 months postoperatively while the percentage of the patients that need hospitalization increased from 0% in both preoperatively and 3 months post-operative to be 13% 6 months postoperatively, it can be justified by, most of the studied patients were diagnosed late after the cancer became extensive and advanced, also the age of the majority of patients were above 50 with a debilitated patients which logically negatively affect the outcome of the major oncologic surgeries like radical cystectomy and urinary diversion, this comes in line with **Meyer et al**<sup>(14)</sup> who stressed that the selection of patient to be candidate to extensive surgeries like radical cystectomy is a crucial aspect not to prevent the occurrence but at least for minimizing the complications and morbidity. In addition, the findings of the present study revealed that there was positive significant relation between age and functional status of the studied patients preoperatively, whereas, most of patients aged less than 50 years were rehabilitated and self-cared in comparison to patients aged 50 years and more. This can be clarified by the effect of aging on the outcome of major oncologic surgery, also the older patients may have less ability to resist the stress of the disease and the operation, resulting in higher level of impairment and reduced physical wellbeing. It is noticed that similar result obtained by **Sharoukh et al**<sup>(15)</sup>, who mentioned that, the treatment and management decisions for older patients should be guided by treatments for comorbid conditions, organ function, frailty and cognitive status. Each age cohort brings a wide range of comorbid conditions, depressive affects, physical, social and cognitive limitations, and other indicators of frailty and associated indications of organ decrements and geriatric syndromes.

The study revealed, the unmarried patients were rehabilitated and self-cared in comparison to the married group. It may be because most of the unmarried patients were in age group less than 50 years who can positively react to the disease and its impact, the same clarification can be logically for the result which confirmed that patients having children need for care taker more than patients who have not. In addition, in a similar study **Marja et al**<sup>(16)</sup>, found that married stroke patients had low scores on the physical functioning when comparing to the unmarried, moreover, In contrast **Aizer et al**<sup>(17)</sup>, found that unmarried patients are at significantly higher risk of presentation with metastatic cancer, under treatment, and death resulting from their cancer. This study highlights the potentially significant impact that social support can have on cancer treatment, and survival,

#### IV. Conclusion

This study was carried out to study the impairment of physical activity post radical cystectomy among bladder cancer patients and to investigate the effect of selected patient's variables on the level of activity. The study revealed a decreased in the level of activity 3 and 6 months post-operative. Also the study indicate a strong significant relation between activity level, age and marital status, 3, 6 months post-operative.

Based on the results of the current study the following recommendation are emphasized as the following;

- Patient's selection must be considered before the decision of surgery will be taken
- Emphasizing the virtue of continuous periodical check up to help in early detection among general population.
- For the results to be viable, the trial would need to be conducted with a larger sample size.

#### Limitations of the study;

- The results of the current study can't be generalized because of small sample size.
- Sample was limited to one setting so, it may interfere with the viability of the results.

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