

## Effectiveness of an Educational Program on Spinal Cord Injured Patients Practice toward Clean Intermittent Catheterization

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### Abstract

**Background:** Patients with spinal cord injuries usually suffer from failure to emptying the bladder, which leads to retention of the urine, so patients will need to learn the self-intermittent catheterization to emptying the bladder, which is one of the best methods according to the results of the previous studies in this scope.

**Objectives:** This study aimed to determine the effectiveness of an educational program on spinal cord injured patients' toward clean intermittent catheterization.

**Methodology:** Pre - Experimental Design (one - group pretest - posttest design). A non-probability (purposive) sample of (26) spinal cord injured patients who were attending the Ibn-Alkuff Hospital for medical treatment and rehabilitation. The study instrument was composed of two parts which: First part consist of Socio-demographic characteristic was included; age, social status, level of education, occupational, and economic status. The second part of the questionnaire comprises (36) items that concerned with patients practices to evaluate patients use clean intermittent catheterization procedure.

**Results:** The majority of the samples (73%) were (18-32) years old, (58%) were single, (42%) were primary graduate, and (50) of those in median level of economic status. The study showed a high statistically significant relationship between patients' practices towards clean intermittent catheterization in pretest and posttest, as  $P \leq 0.05 = (.000)$  in all domains.

**Conclusion:** The current study found that the educational program concerning clean intermittent catheterization had a good effect on the patients' practices.

**Recommendation:** The study recommended the necessity of intensifying educational programs on intermittent catheterization for nurses in order to teach them to patients suffering from neurogenic bladder

**Keywords:** Effectiveness; Educational Program; Spinal Cord Injury; Clean Intermittent Catheterization.

## Introduction

Spinal cord injuries that occur to individuals are accompanied by many problems and complications that can limit movement and functional independence. These complications include motor paralysis, sensory dysfunction, lung problems, low blood pressure, sexual disorder, neurogenic bowel and bladder, and others. Neurogenic bowel and bladder are the most troublesome problems that effect on self-efficacy and an individual's lifestyle <sup>(1-4)</sup>. Neurogenic bladder is one of the most common problems associated with spinal cord injured patients, so full care must be taken, the maintenance of urinary incontinence, and the rehabilitation of the bladder to avoid other urinary complications. <sup>(5)</sup>. Patients with spinal cord injuries are among the most susceptible to developing urinary tract infections, <sup>(6-8)</sup>. The most common cause of death for patients with spinal cord injuries is urinary tract infection, and it is the main reason for them to enter the emergency department from time to time. <sup>(7)</sup>. Poor management of the neurogenic bladder and poor care of it in patients with a spinal cord injury, this increases the risk of developing a urinary tract infection <sup>(8)</sup>. Emptying a neurogenic bladder well is one of the best ways to treat and prevent complications from it <sup>(9)</sup>. Urinary tract catheterization is one of the most important primary measures in the management of patients with spinal cord injury <sup>(10)</sup>. Other alternative options for proper emptying of the bladder are clean intermittent catheterization, supra-pubic drainage, and condom drainage. <sup>(11)</sup>. Intermittent self-catheterization is the ideal method and is considered the gold standard for bladder emptying in patients with neurogenic bladder and urinary retention <sup>(12)</sup>. Clean Intermittent catheterization is a safe and effective way to preserve bladder function as well as contribute to improving body image, increasing self-confidence and regulating the quality of life of patients with spinal cord injury <sup>(13)</sup>.

## Methodology

Pre - Experimental Design (one - group pretest - posttest design) has been carried out to determine the Effectiveness of an Educational Program Concerning Clean Intermittent Catheterization for Patients with Spinal Cord Injury in Baghdad City. A non-probability (purposive) sample of (26) spinal cord injured patients who were attending the Ibn-Alkuff Hospital for medical treatment and rehabilitation. The study started from November 1<sup>st</sup> 2020 to March 6<sup>th</sup> 2021. The inclusion criteria includes: Age 18 and above, male patients, patients with paraplegia and normal manual dexterity. Exclusion criteria includes: female patients, confused state or depression, patient with tetraplegia. The educational program concerning clean intermittent catheterization designed is based on information gained from reviewing the relative scientific literature, and previous studies. The study instrument was composed of two parts which: First part consist of Socio-demographic characteristic was included; age, social status, level of education, occupational, and economic status. The second part of the questionnaire comprises (36) items that concerned with patients practices to evaluate patients use clean intermittent catheterization procedure includes: (a) preparing an equipment consist of (4) items, (b) Hand washing procedure consist of (11) items, (c) Genital washing consist of (3) items, (d) Gloves wearing consist of (5) items, (e) Catheter insertion consist of (9) items, (f) Cleaning the CIC consist of (4) items. These items were rated according to Likert scale: Not Applied = 1 (1 – 1.66), False Applied = 2 (1.67 – 2.33), Applied = 3 (2.34 – 3). The content validity of the program and the study instruments were determined by the panel of (10) experts who had more

than (12) years experiences in their field. The researcher was determines the internal consistency by use the inter-observation method. The reliability of the coefficient was ( $r = 0.82$ ). Data were collected through observational checklist to check patients' practices toward CIC procedure. Data were analyzed through the application of descriptive and the inferential data analysis approach by using SPSS version 20.

## Results

The demographic characteristic table (1) indicated that the majority of the samples (73%) were (18-32) years old , (58%) were single , (42%) were primary graduate , (27%) of those were middle school graduated (23%) were secondary graduate , (31%) were does not work , and (31%) were employee, and (50) of those in median level of economic status. Evaluation of patients' practices regarding clean intermittent catheterization in pretest and posttests trails table (2). Whereas the patients' answers in most of the items at pretest were (Not Applied), while their all answers in the posttest were (Applied). The study showed a high statistically significant relationship between patients' practices towards clean intermittent catheterization in pretest and posttest, as  $P \leq 0.05 = (.000)$  in all domains table (3).

**Table (1) Distribution of spinal cord injured patients by demographic characteristic (N = 26).**

Demographic variable		Frequency	Percentage
Age	18 – 22	8	31.0
	23 – 27	5	19.0
	28 – 32	6	23.0
	33 – 37	4	15.0
	38 – 42	3	12.0
Social status	Single	15	58.0
	Marred	11	42.0
Level of Education	Not read or write	1	4.0
	Primary graduate	11	42.0
	Middle school graduated	7	27.0
	Secondary graduate	6	23.0
	Institute graduate	1	4.0
Occupation	Student	4	15.0
	Employee	8	31.0
	Free business	6	23.0
	Does not work	8	31.0
Economic Status	Low income	8	31.0
	Median Income	13	50.0
	Good income	5	19.0

**Table (2) Evaluation of Patients' Practice Regarding Clean Intermittent Catheterization at the Pretest and Posttest Trial (N = 26).**

Domain	Pretest		Posttest	
	M.S	Evaluation	M.S	Evaluation
<b>Preparing an Equipment</b>	1.58	Not Applied	3.00	Applied
<b>Hand Washing</b>	1.26	Not Applied	2.73	Applied
<b>Genital washing</b>	1.00	Not Applied	2.93	Applied
<b>Gloves Wearing</b>	1.00	Not Applied	2.38	Applied
<b>Catheter insertion</b>	1.28	Not Applied	2.87	Applied
<b>Cleaning the CIC</b>	1.00	Not Applied	2.94	Applied
<b>TOTAL</b>	<b>1.19</b>	<b>Not Applied</b>	<b>2.81</b>	<b>Applied</b>

M.S = Mean of score, [Not Applied (1 - 1.66), False Applied (1.67 - 2.33), Applied (2.34 - 3)]

**Table (3) Comparison of the total all for each domain in pretest and posttest (N = 26).**

Domain	Period	M.S	t	D.F	P ≤ 0.05	Sig.
<b>Preparing an Equipment</b>	Pretest	6.08	10.846	25	.000	H.S
	Posttest	12.00				
<b>Hand Washing</b>	Pretest	13.85	16.478	25	.000	H.S
	Posttest	30.08				
<b>Genital Washing</b>	Pretest	3.00	60.256	25	.000	H.S
	Posttest	8.81				
<b>Gloves Wearing</b>	Pretest	5.00	18.041	25	.000	H.S
	Posttest	11.88				
<b>Catheter Insertion</b>	Pretest	11.58	16.097	25	.000	H.S
	Posttest	25.88				
<b>Cleaning and Maintaining the CIC</b>	Pretest	4.00	77.012	25	.000	H.S
	Posttest	11.77				

M.S = Mean of score, t = Paired-Samples T Test, D.F = Degree of Freedom, P = P. Value, Sig. = Significant, H.S = High significant.

## Discussion

Demographic Characteristics of the Study Sample in Table (1) indicated that the majority of them (73%) were (18-32) years old, (58%) were single (42%) were married. (42%) elementary school graduates, (27%) of those were middle school graduated (23%) were secondary graduate, (31%) were does not work, and (31%) were employee, (23%) were free business, and (50%) of those in median level of economic status. Huang C. et al, (2019) <sup>(14)</sup> found in the results of their study that the average age of the participants is (39.25). Moreover, Afsar S. et al, (2013) <sup>(15)</sup> reported that most of the participants (55.9%) were elementary school graduates. The results in Table (2)

showed that there were statistically significant differences in the mean of the study sample between performing the pre and posttest. Where the total average of the intermittent catheterization performance before receiving the program was (1.19), which means that the participants are unable to apply the intermittent catheterization, while the overall average of the intermittent catheterization performance became (2.81) after receiving the program, this indicates that the participants have acquired sufficient skill to perform the intermittent catheterization. Sang Rim L. et al, (2018) <sup>(16)</sup> were able to conduct a study regarding an extensive instructional program of intermittent catheterization for patients with bladder emptying problems, as their results showed that most of the participants demonstrated a high level of understanding, satisfaction and confidence toward the clean intermittent catheterization. The results in Table (3) showed the difference between the overall total of patients' practices regarding intermittent catheterization in pretest and posttest for the six domains and included: equipment preparation, hand washing, genital washing, gloves wearing, catheter insertion, CIC cleaning and maintenance. The results indicated a highly statistically significant relationship between all the variables. These results indicate that the patients have understood the educational program toward clean intermittent catheterization and has therefore been applied correctly several times.

## **Conclusions**

The current study found that the educational program concerning clean intermittent catheterization had a good effect on the patients' practices, and the steps of performing the intermittent catheterization were applied perfectly by all the study participants.

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## **References**

1. Anderson KD. Targeting recovery: Priorities of the spinal cordinjured population. J Neurotrauma 2004;21(10):1371–83.
2. Braaf S, Lennox A, Nunn A, Gabbe B. Social activity and relationship changes experienced by people with bowel and bladder dysfunction following spinal cord injury. Spinal Cord 2017;55(7): 679–86.

3. Liu CW, Huang CC, Yang YH, Chen SC, Weng MC, Huang MH. Relationship between neurogenic bowel dysfunction and health-related quality of life in persons with spinal cord injury. *J Rehabil Med* 2009;41(1):35–40.
4. Rubin EB, Buehler AE, Halpern SD. States worse than death among hospitalized patients with serious illnesses. *JAMA Intern Med* 2016;176(10):1557–9
5. Yang CC. Bladder management in multiple sclerosis. *Phys Med Rehabil Clin N Am* 2013; 24: 673–686. DOI: 10.1016/j.pmr.2013.06.004.
6. Pannek J: Treatment of urinary tract infection in persons with spinal cord injury: guidelines, evidence, and clinical practice. A questionnaire-based survey and review of the literature. *J Spinal Cord Med*, (2011) 34(1):11–15
7. Cardenas DD et al: Etiology and incidence of rehospitalization after traumatic spinal cord injury: a multicenter analysis. *Arch Phys Med Rehabil*, (2004) 85(11):1757–1763
8. Taweel WA, Seyam R: neurogenic bladder in spinal cord injury patients. *Res Rep Urol* (2015) 7:85–99
9. Trautner BW, Darouiche RO Prevention of urinary tract infection in patients with spinal cord injury. *J Spinal Cord Med*, (2002) 25(4):277–283
10. Vigil HR, Hickling DR: Urinary tract infection in the neurogenic bladder. *Transl Androl Urol* (2016) 5(1):72–87
11. Hennessey D, Kinnear N, MacLellan L, Byrne C: The effect of appropriate bladder management on urinary tract infection rate in patients with a new spinal cord injury: a prospective observational study. *World Journal of Urology*, (2019) (37):2183–2188.
12. Newman DK, Willson MM. Review of intermittent catheterization and current best practices. *Urol Nurs* 2011;31:12-28, 48.
13. Silva DRA, Mazzo A, Jorge BM, Souza Júnior VD, Fumincelli L, Almeida RGS. Intermittent urinary catheterization: the impact of training on a low-fidelity simulator on the self-confidence of patients and caregivers. *Rehabil Nurs* 2017;42:97-103.
14. Huang C. Wang J. Chen J. et al: development of an assistant system of clean intermittent catheterization for neurogenic bladder dysfunction patients, *Journal/applsci, Appl. Sci.* 2019, 9, 1433; doi: 10.3390/app9071433, pp. 1-11.
15. Afsar S. Yemisci O. Cosar S. et al: Compliance with clean intermittent catheterization in spinal cord injury patients: a long-term follow-up study, *Spinal Cord* (2013) 51, 645–649.
16. Sang Rim L. In Sook L. Seung-June, O. et al: Adherence to the Clean Intermittent Catheterization Following a Customized Intensive Education Program for Patients with Emptying Failure, *J Korean Acad Community Health Nurs*, (2018) Vol. 29 No. 4, 467-475, December.