NHSJ Nursing and Health Sciences Journal

Volume 2, Number 4 (December 2022)
e-ISSN: 2798-5067
p-ISSN: 2798-5059

Self-Confidence Levels of Individuals Performing Clean Intermittent Catheterization and The Affecting Factors

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Article Info:
Submitted:
14-09-2022
Revised:
09-10-2022
Accepted:
12-10-2022

ABSTRACT

Introduction: This study aimed to determine the self-confidence levels of individuals with spinal cord injury, who performed clean intermittent catheterization (CIC), and the factors affecting their self-confidence. Methods: Descriptive cross-sectional study. The study was conducted on 107 individuals with spinal cord injury. Results: The mean age was 39.26±13.46 years. Data were collected via Google Survey between March and September 2021. The mean Self-confidence Scale for Clean Intermittent Self-Catheterization (SCSCISC) score was 4.14±0.81, indicating relatively high levels of self-confidence. However, the participants obtained moderate scores from the items "what to do when there is blood in the urine" and "what to do when there is no urine", which were 3.02±1.5 and 3.01±1.5, respectively. The SCSCISC scores were significantly higher for the participants, who were male, had a job, did not use medication for bladder problems, and were functionally semi-independent or independent. Discussion: General level of self-confidence was high, but the participants did not know what to do when there was blood in the urine or when there was no urine. Self-confidence levels were influenced by age, gender, working status, functional independence, and medication use for bladder problems.

Keywords: clean intermittent self-catheterization, urologic management, spinal cord injury, self-confidence, nursing

INTRODUCTION

Spinal cord injury (SCI) creates a turning point in the lives of individuals. These individuals have to cope with many medical, emotional, social, and economic problems. One of the most important medical complications experienced by individuals with SCI is the neurogenic bladder. Spinal cord injury is mostly followed by neurogenic lower unitary tract dysfunction, which may require assisted bladder emptying rather than volitional voiding. Assisted bladder emptying methods for individuals with SCI may include an indwelling catheter or clean intermittent catheterization (CIC). An indwelling catheter is associated with urinary tract infection (UTI) and complications, such as kidney and bladder stones, renal insufficiency, hydronephrosis, increased risk of bladder cancer, pressure ulcers, and hospitalization (Afsar et al., 2013). Due to this reason, most clinicians and guidelines recommend CIC as the preferred bladder management strategy in individuals with SCI, who require catheter-based bladder management (Kriz & Relichova, 2014; Rabadi & Aston, 2015).

Despite the complication risks related to indwelling catheters, nearly 70% of the individuals performing CIC reverted to indwelling catheters over time (Dinh et al., 2019; Patel et al., 2020) . The reasons behind this change may include urinary incontinence and increasing frequency of UTI (Patel et al., 2020). Most discharged patients do not pay sufficient attention to the fluid regimen, time of CIC, and hygiene while performing CIC. It has been observed that non-compliance with the rules to be considered in CIC application both affects CIC compliance and causes complications. An existing study found a meaningful relationship between compliance with CIC, the number of CIC applications, and the person who performs CIC (Yıldız et al., 2016).

70% of the individual with SCI perform CIC on their own (Yılmaz et al., 2014). It was determined that, among individuals who performed CIC, there were situations such as fear (50.2%), self-harm (43.8%), embarrassment (43.2%), causing infection (40.2%), bleeding (32.7%), fear of feeling pain (30.2%) and failing to provide hygiene (24.7%) (Yılmaz et al., 2014). After taking these situations into consideration, it was thought that the relationship between individuals' ability to perform CIC and self-confidence should be examined. The self-confidence levels of these individuals are highly

Volume 2, Number 4 (December 2022)
e-ISSN: 2798-5067
p-ISSN: 2798-5059

important for compliance with the CIC stages. However, no studies have been conducted on the self-confidence levels of the individuals with SCI, who performed CIC and the factors affecting their self-confidence.

The role of nurses in CIC is to provide education and counseling to the patients and/or caregivers so that they can perform CIC. Skills to perform CIC gained through education will increase the self-confidence and self-esteem levels of the individuals by helping them to regain their independence and perform daily life activities. Self-confidence is an important concept that has an important effect on managing and performing CIC (Çulha & Acaroğlu). Identifying the factors affecting this process and the self-confidence, autonomy, and skills gained during the adaptation to the CIC will help the individual with SCI to perform bladder management correctly. Consequently, it is important to determine the self-confidence levels of individuals with SCI, who performed CIC and the factors affecting their self-confidence.

Research questions: What are the factors affecting the levels of confidence of individuals performing clean intermittent catheterization? What is the level of self-confidence of individuals who perform clean intermittent catheterization? This study aimed to determine the self-confidence levels of individuals with spinal cord injury, who performed clean intermittent catheterization (CIC), and the factors affecting their self-confidence.

METHOD

Study design: This study had a cross-sectional study design. Participants: Voluntary individuals with SCI at the age of 18 years and above, who could communicate, and performed CIC on their own for at least six months were included in the study. An accidental sampling method was used. The sample size was 107. Volunteering was essential. Bias was avoided since accidental sampling was chosen.

Data collection: We contacted the Spinal Cord Paralytics Association of Turkey and used various social media platforms to invite the participants. Data were collected between March and September 2021. Sociodemographic and clinical characteristic form and the Self-confidence Scale for Clean Intermittent Self-Catheterization (SCSCISC) were used for data collection. Data were collected via Google Surveys due to the COVID-19 pandemic.

The sociodemographic and clinical characteristic form was prepared by the researchers in line with the literature and was composed of two parts. The first part had 9 questions on the sociodemographic characteristics of the participant's (Alavinia et al., 2017; Leek et al., 2019; Shigemura et al., 2020) whereas the second part consisted of 12 questions on diagnosis, SCI level, UTI and chronic diseases(Alavinia et al., 2017; Leek et al., 2019; Shigemura et al., 2020). Expert opinion was received while preparing the form.

The SCSCISC was developed by Biaziolo et al. (2017) to evaluate the level of self-confidence about CIC and was adapted into Turkish by Çulha and Acaroğlu (2020). It included 16 items on the perceived capacity of the individuals to perform each step of CIC, which were scored on a five-point Likert scale, ranging from 1 (not confident) to 5 (completely confident). Possible scores ranged between 16 and 80, with higher scores indicating higher level of self-confidence in performing CIC. The scale had no subscales. Cronbach's alpha of the Turkish version of the scale was 0.94 (Çulha & Acaroğlu).

Data analysis: PSPP and Microsoft Excel software was used for data analysis. Mean, standard deviation, number, frequency, and minimum-maximum values were used for descriptive analysis. Pearson's correlation coefficient was used for intergroup comparison. Univariate and multivariate logistic regression were used for advanced statistical analysis. Statistical significance was set at 0.05.

Ethical considerations: After obtaining the approval of the Medical Research Evaluation Committee (ATADEK-2021/6/01 resolution, dated March 24th, 2021), we obtained the contact information of the voluntary participants. Due to the COVID-19 pandemic; we had a phone conversation with each participant to inform them about the aim of the study and obtained their verbal consent. The participants that volunteered were asked to complete the survey via Google Surveys. The first page of the online survey asked for written informed consent. All researchers had prior professional experience in rehabilitation centers.

RESULT

Table 1 presented the sociodemographic and clinical characteristics of the participants. Accordingly, mean age of the participants was 39.26±13.46 years, 74.8% were male, 58.9% were single, 43.9% were graduates of high school, 80.4% were unemployed, 23.4% had a chronic disease and 53.3% earned an income below expenses. SCI levels were T1-T9 for 30.8% and T10-T12 for 27.1% of the participants. Primary reasons of SCI were traffic accident (33.6%) and falling from high (29%). Besides, 68.2% (n=73) experienced bladder problems, 71% (n=76) used medications for bladder problems and the UTI was the main reason of medication use in 36.4% (n=39). Furthermore, 77.6% of the participants

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e-ISSN: 2798-5067
p-ISSN: 2798-5059

used medications in case of UTI symptoms whereas 14.5% regularly used medications for UTI. 71% (n=76) of the participants underwent surgery and 36.4% of these surgeries were related to SCI. The mean duration of CIC was 9.13±4.73 years and the mean daily CIC frequency was 5.17±1.06. Finally, 16.8% were dependent on caregivers for daily activities.

Table 1. Sociodemographic and Clinical Characteristics (n=107)

	Mean ± SD	Min–Max
Age	39.26±13.46	15±80
How long have you been performing CISC? (years)	9.13±4.73	2 - 24
How often do you perform CISC a day?	5.17±1.06	3 - 8
	n	%
Gender		
Male	80	74.8
Female	27	25.2
Marital Status		
Single	63	58.9
Married	44	41.1
Education Level		
Primary school	42	39.3
High school	47	43.9
University	18	16.8
Current Working		
No	86	80.4
Yes	21	19.6
Income Level		
Below expenses	57	53.3
Equal to or above expenses	50	46.7
Chronic Disease		
No	82	76.6
Yes	25	23.4
SCI level		
C2-C7	17	15.9
T1-T9	33	30.8
T10-T12	29	27.1
L1	5	4.7
Unknown	23	21.5
Reason of injury		
Traffic accident	36	33.6
Falling from high	31	29
Occupational accident	14	13.1
Firearm injury	6	5.6
Water accident	5	4.7
Other reasons	15	14
Urinary bladder problems		
No	34	31.8
Yes	73	68.2
Medication Use for Bladder Problems		
No	31	29
Yes	76	71
Reasons of Medication Use for Bladder Problems		
Pain	2	1.9
Hydronephrosis	4	3.7
Ureterorenal reflux	14	13.1
UTI	39	36.4
Incontinence	2	1.9
Kidney/bladder stone	6	5.6
Neurogenic bladder	9	8.4

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e-ISSN: 2798-5067
p-ISSN: 2798-5059

Cont.....

	n	%
Frequency of Medication Use for UTI		
Use in case of UTI symptoms	59	77.6
Regular use and increase the dose in case of UTI symptoms	6	7.9
Regular use	11	14.5
Underwent Surgery		
Yes	31	29
No	76	71
Surgeries Underwent		
Herniated disk	13	12.1
Brain	3	2.8
Cervical disk	3	2.8
Bladder and kidney	18	16.8
Spinal cord injury	39	36.4
Functional Independence		
Dependent	18	16.8
Independent	24	22.4
Semi-dependent	65	60.7

Table 2 presented the scores obtained from the items of the SCSCISC. The mean score obtained from the SCSCISC was 4.14±0.81 (1-5). However, mean scores obtained from the items "what to do when there is blood in the urine" and "what to do when there is no urine", were 3.02±1.5 and 3.01±1.5, respectively.

Table 2. Distribution of SCSCISC Scores According to Items

	Mean ± SD	Min–Max
1. Perform urinary catheterization	4.03±1.3	1-5
2. Choose the best time to perform the procedure	4.03±1.14	1-5
3. Choose the correct material to perform the material	4.38±1.02	1-5
4. Wash my hands	4.38±1.11	1-5
5. Perform genital hygiene	4.17±1.29	1-5
6. Open the material	4.45±1.08	1-5
7. Choose to use or not the lubricant	4.52±1.04	1-5
8. Insert the catheter	4.36±1.15	1-5
9. Verify how much catheter must be inserted	4.33±1.05	1-5
10. Decide how much time to keep urine dripping	4.08±1.33	1-5
11. How to withdraw the catheter	4.33±1.21	1-5
12. Measure the collected urine	4.28±1.07	1-5
13. What to do when there is blood in the urine	3.02±1.5	1-5
14. What to do when there is no urine	3.01±1.5	1-5
15. How to discard urine	4.54±0.86	1-5
16. How to write down the obtained quantity of urine	4.28±1.12	1-5
Mean	4.14±0.81	1-5

Table 3 presented the relationship between the SCSCISC scores and sociodemographic and clinical characteristics. Univariate logistic regression analysis identified a significant relationship between gender, medication use for bladder problems, functional independence and a SCSCISC score over four ($p<0.05$). On the other hand, multivariate logistic regression analysis identified a significant relationship between a SCSCISC score over four, gender, age, income level, working status, chronic diseases, and functional independence ($p<0,05$). Finally, there was a statistically significant and positive relationship between SCSCISC scores and the duration of CIC ($r=0.272$; $p<0.05$).

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Table 3. Relationship between the SCSCISC Scores and Sociodemographic and Clinical Characteristics

	Univariate					Multivariate				
	B	p	Exp(B)	95% C.I. for EXP(B)		B	p	Exp(B)	95% C.I. for EXP(B)	
				Low.	Upp.				Low.	Upp.
Age	-0.02	0.15	0.98	0.95	1.01	-0.10	0.01*	0.91	0.84	0.98
Gender (Ref: Female)	0.81	0.001*	2.24	1.4	3.57	2.34	0.001*	10.40	2.98	36.26
Marital status (Ref: Married)	0.3	0.16	1.35	0.89	2.06					
Education level (Ref: High school)	-0.36	0.55	0.7	0.21	2.31					
Education level (Ref: University)	0.27	0.67	1.31	0.38	4.56					
Currently working (Ref. No)	0.79	0.043*	2.2	1.03	4.71	1.37	0.049*	3.93	0.98	15.71
Income level (Ref: Equal)	-0.23	0.29	0.79	0.52	1.21	1.65	0.001*	5.23	1.79	15.26
Chronic diseases (Ref: Yes)	0.03	0.90	1.03	0.63	1.69	1.93	0.02*	6.88	1.42	33.29
SCI level (C2-C7) (Ref T10-T12)	0.24	0.55	1.27	0.58	2.79					
SCI level (T1-T9) (Ref T10-T12)	0.22	0.59	1.25	0.55	2.83					
SCI level (L1) (Ref T10-T12)	0.8	0.15	2.22	0.74	6.65					
SCI level (Unknown) (Ref T10-T12)	-1.15	0.13	0.32	0.07	1.39					
Urinary bladder problems (Ref: Yes)	0.02	0.94	1.02	0.65	1.59					
Medication use for bladder problems (Ref: Yes)	0.92	0.0001*	2.52	0.58	1.38					
Functional independence independent (Ref: dependent)	1.37	0.004*	3.94	1.56	9.98	1.92	0.001*	6.82	1.90	24.52
Functional independence semi-dependent (Ref: dependent)	0.81	0.024*	2.25	1.11	4.56	1.75	0.001*	5.75	1.71	19.28

DISCUSSION

This study analyzed the self-confidence levels of SCI patients performing CIC and the factors affecting their self-confidence. Demographic characteristics of the participants, including age, gender, marital and working status, education level, and the reasons for injury were similar to the findings of other studies (AlSaleh et al., 2020; Cobussen-Boekhorst et al., 2016; Gao et al., 2017; Jorge et al., 2018).

Although UTI was the primary bladder problem of the participants, other complications, including, ureterorenal reflux, bladder stone, and hydronephrosis, were similar to the literature (AlSaleh et al., 2020; Gao et al., 2017; Woodward et al., 2013). The majority of the participants used medications for UTI treatment. Existing studies reported that individuals with SCI mostly used antibiotic prophylaxis and considered this as normal behavior. Various studies found that low-dose antibiotic prophylaxis was associated with positive health experiences, lower frequency, and lower symptoms of UTI (Mariani et al., 2022; McClurg et al., 2018). For example, the study by Fisher et al. (2018) found a 48% decrease in the frequency of UTI after one-year use of symptomatic antibiotics (Fisher et al., 2018).

We found a significant relationship between self-confidence, age, gender, duration of CIC, functional independence, income levels, working status, medication use for bladder problems, and chronic diseases. Male participants had higher levels of self-confidence than their female counterparts. Due to anatomical differences, male individuals may find it easier to learn and perform CIC (Parsons et al., 2012). They may hold the catheter and redirect the penis to the correct urethra at the same time. On the other hand, female patients are required to try different positions and use a mirror and a light source to insert the catheter. In this sense, it is more difficult for female participants to find the most suitable position to insert the catheter (Balhi & Mrabet, 2020; Ramm & Kane, 2011). An existing study reported that cleaning the perineum caused the most discomfort in male patients whereas female patients believed that identifying the urethra caused the most discomfort (Lee et al., 2018). Consequently, the self-confidence levels of males may be higher while performing CIC.

The mean duration of CIC was approximately 10 years, and the mean number of daily CIC was five, which were also similar to the literature (Cobussen-Boekhorst et al., 2016; Gonzalez Chiappe et al., 2016). We found a statistically significant relationship between the level of self-confidence and the duration of CIC. The skills of the individuals to

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e-ISSN: 2798-5067
p-ISSN: 2798-5059

perform CIC may increase over time so that the level of self-confidence may be positively associated with the duration of performing CIC. As the individuals become more experienced with CIC, their levels of self-confidence increase.

We found a positive relationship between functional independence and self-confidence. That is, the level of self-confidence was higher in SCI patients, who were functionally independent. Haddad et al. reported that a 1-point increase in functional independence measure was associated with 6% increase in successfully mastering the CIC technique (Haddad et al., 2022). However, age was negatively associated with self-confidence in performing CIC. Other studies also reported a negative relationship between aging and CIC performance (Lake, 2018). The risk of secondary diseases may increase as the SCI patients get older. Furthermore, the self-confidence levels of the participants with chronic diseases were lower. An existing study found that upper extremity motor functions in CIC were affected by obesity and comorbidity (Elliott et al., 2019). Consequently, it is plausible to expect a higher level of self-confidence in younger individuals without chronic diseases.

Working is an indicator of functional independence in daily activities. Since the individuals that work perform CIC in their working environment, it is logical to expect these individuals to perform CIC in different settings and to be more self-confident. On the other hand, contrary to expectations, we found that the participants with an income level lower than their expenses had higher level of self-confidence. A study in Pakistan found that the SCI patients used the same disposable catheter for 5-7 days due to financial reasons (Mansoor & Rathore, 2019). Since individuals with financial difficulties may not have the opportunity to buy another disposable catheter, they may try to perfect CIC performance so that their level of self-confidence in performing CIC may increase.

Self-confidence levels were higher for the participants using medications for bladder problems. The risks of bladder problems are higher in SCI patients, especially in the long run (Afsar et al., 2013). During the process, they experience and learn various bladder management methods (Velaer et al., 2021). Depending on spasticity, maximum cytometric capacity, number of intermittent catheterization applications, and the person who applies, some the SCI patients may revert CIC to indwelling catheters after discharge (Afsar et al., 2013). Other patients may revert to indwelling catheters for a limited time and return back to CIC after the symptoms of UTI disappear. The individuals with successful bladder management may comply with CIC techniques than using medications, which, in turn, may increase their self-confidence.

Analysis of the items of the SCSCISC showed that the participants obtained moderate scores from the items of “what to do when there is blood in the urine” and “what to do when there is no urine”. Blood in the urine may be an indicator of urethral trauma or systemic infection (Korkut et al., 2021; Woodward et al., 2013). Urethral trauma in CIC is mostly caused by unlubricated catheters and the type of material or procedures. Characterized by pain and bleeding, urethral trauma occurs due to the friction of a poorly lubricated catheter to the urethral mucosa. Additionally, it may result in the infection with bacteria responsible for the development of UTI (Orlandin et al., 2020). If the patients develop symptoms of systemic infection accompanied by dysuria or hematuria, a urine sample is required for culture and sensitivity, then the appropriate antibiotics are provided (Woodward et al., 2013). Besides, another study reported that 4.2% of the patients that performed CIC experienced narrowing, which caused bleeding. 86% of these patients received ureteroscopy accompanied by a one-year follow-up. Consequently, although the patients can learn how to perform CIC, they should be supported by health professionals since CIC may cause infection or damage, which, in turn, may lead to fear and anxiety (Wilson, 2015). Lake (2018) reported that the patients should be followed-up for at least one year after discharge, which may be conducted via e-mail, telephone calls, or face-to-face, depending on patient needs. Another study followed up 43 patients for 40-to-50 years and found that complex urological complications were observed in patients with SCI during the follow-up (Gao et al., 2017). Consequently, the patients should also be followed-up for bladder management in the long run.

CONCLUSION

This study analyzed the self-confidence levels of SCI patients performing CIC and the factors affecting their self-confidence. The study identified age, gender, working status, functional independence, chronic disease, and medication use for bladder problems as the factors influencing self-confidence in CIC. Although the general level of self-confidence was high, the participants did not know what to do when there was blood in the urine or when there was no urine. Therefore, individuals with SCI should be followed-up in the long run.

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e-ISSN: 2798-5067
p-ISSN: 2798-5059

LIMITATIONS

Since the participants' level of education was low, some of the data, such as diagnosis, which were collected via Google Survey during the COVID-19 pandemic, were missing. Phone interviews were conducted to collect missing data.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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