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RESEARCH ARTICLE

DETERMINING THE PRACTICES OF PARAPLEGIA PATIENTS CONCERNING THE SELF APPLIED CLEAN INTERMITTENT CATHETERIZATION

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ABSTRACT

Purpose: The aim of this study is to determine the practices of patients with paraplegia for Clean Intermittent Catheterization (CIC).

Material and Methods: This descriptive study was conducted on 145 patients with paraplegia who were hospitalized in a physical therapy and rehabilitation hospital, who applied CIC, who were 18 years of age and older, who could use their upper extremities, who were at least literate, and who agreed to participate in the study. In the research, a questionnaire consisting of 39 questions prepared by the researchers in line with the literature was used as a data collection tool. Institutional permission, ethics committee approval and patient consent were obtained before data collection. The data were evaluated by performing count, percentage, mean and standard deviation analyzes.

Results: The mean age of the patients was 36.43±13.29 years. CIC application periods are between 3 months and 20 years, and the number of CIC applications in a day is between 1-8. The applications for the pre-procedure, during and post-procedure steps of the patients who applied CIC with paraplegia were determined, and it was concluded that they did not have sufficient knowledge.

Conclusion: It can be recommended to plan trainings on the steps of the procedure during the hospitalization period for patients who apply CIC with paraplegia.

Keywords: Paraplegia, clean intermittent catheterization, practice, nursing care.

INTRODUCTION

Paraplegia is one of the health problems that occur as a result of spinal cord injuries that seriously affect the life of the individual in many ways (1-3). Paraplegia; is a clinical condition that develops due to spinal cord injury caused by head trauma, brain tumor, venous sinus thrombosis, ischemic or hemorrhagic cerebrovascular causes (4,5).

Paraplegic patients have a reduced resistance to infection and an increased risk of contracting a disease. In addition, paraplegic patients' quality of life is negatively affected in many ways. In individuals with neurogenic or non-neurogenic paraplegia, the bladder cannot function fully and the bladder capacity cannot be completely emptied. In this case, permanent or temporary bladder catheterization is

applied (6). Clean Intermittent Catheterization (CIC) application, which is temporary bladder catheterization, is one of the methods that ensure bladder emptying in bladder dysfunction in paraplegic patients (7-9). The prevalence of CIC in patients with paraplegia, was determined at the level of 62.6% (10). According to the Center for Disease Control and Prevention 2015 report; Infections related to catheter applications constitute 75% of urinary infections (11). The incidence of urinary infection is significantly reduced when CIC is applied to the individual with aseptic techniques (9). Compliance with the principles of asepsis, providing hygiene rules and bladder rehabilitation are among the subjects within the scope of nursing services. The nurse; has the responsibility to maintain the aforementioned issues effectively in patients and to provide information and education to the patient (12). It will be possible for patients to apply CIC on their own by preventing or reducing the risk of developing complications with the right methods in their hospital and out-of-hospital life, only with the nursing education given. It is necessary to look at the readiness of individuals for nursing education and to determine the practices of patients who apply CIC.

Although there are studies on patients with paraplegia and CIC applications, studies on the procedure steps performed by patients with paraplegic CIC in practice are limited. Therefore, in this study, it was aimed to determine the self-administered CIC of patients with paraplegia.

MATERIALS AND METHODS

This descriptive study was conducted in Physical Therapy and Rehabilitation. The data of the study was collected between October 2021 and April 2022. Inclusion criteria for the study; Patients who were diagnosed with paraplegia, performed CIC on their own, were literate, aged 18 and over, were conscious, had a stable clinical condition, could use their upper extremities, had no hearing and vision problems, and agreed to participate in the study. The sample number of the study was determined by the G*POWER 3.1 statistical analysis program; The significance level was calculated as 0.05, the power was 95%, and the effect size was 0.3 (medium effect size) based on 145 people. The sample of the study was terminated when the sufficient number of samples calculated in G*POWER, 145, was reached following the beginning of the research. This process took six months (October 2021-April 2022) to complete.

The patients' practices regarding the pre-, during and post-procedure steps of CIC are the dependent variables of the study. The introductory characteristics of the patients and some features of the use of CIC, such as how long, how often, etc., also constitute the independent variables of the study.

In the research, a questionnaire consisting of 39 questions prepared by the researchers in line with the literature was used as a data collection tool (3,4,6-9,13-16). The questionnaire form consists of five parts that will determine the introductory and characteristics of individuals regarding the use of CIC and their practices regarding the pre-, during and post-process steps of CIC. The form consists of eight questions about the introductory characteristics of individuals, three questions determining the characteristics of TAK use, 10 questions about the pre-processing steps of TAK, nine questions about the steps of TAK during the process, and nine questions about the post-processing steps of TAK. All questions in the questionnaire form, except age, height, and weight, consist of optional questions. The questionnaire form was pre-applied on 30 patients with paraplegia who fit into the sample group, and its intelligibility and effectiveness were tested. As a result of the application, the questions that were not perceived by the patients in the same sense, unclear and difficult to understand were changed and the questionnaire form was made ready for application. The data of patients with paraplegia who were pre-treated were not included in the study.

Institutional permission numbered E-26171210-929 from Provincial Health Directorate Scientific Study Commission regarding the place where the study will be conducted before data collection, and Clinical Research Ethics Committee dated 05.10.2021 decision numbered 2021-16/171 was taken. After explaining the purpose of the research to the patients and obtaining consent from the patients, a questionnaire form was given to the patients by the researcher, and they were asked to fill in. The study was carried out in accordance with moral, conscientious and medical rules according to the articles specified in the Declaration of Helsinki. Data were collected by the researcher through face-to-face interviews. It took 15-20 minutes for the participants to fill out the questionnaire.

RESULTS

Of the patients participating in the study, 29.7% were female and 70.3% were male. The mean age of the patients was 36.43±13.29 (min:18, max:70). Considering the education level of the patients; it was determined that the majority of them were high school (33.8%) and secondary school (32.4%) graduates (Table 1).

CIC application times of the patients; 0-3 years (32.4%), 4-7 years (35.9%), 8-11 years (24.8%), 12-15 years (2.1%), 16 years and above (4.8%). CIC was performed once a day (2.8%), twice a day (4.8%), thrice a day (5.5%), four times a day (31.7%), five times a day (7.6%), six (37.3%) a day, seven or more per day (10.3%). It was determined that the mean duration of CIC use of the patients was 2.11±1.04 years and the frequency of CIC use was 4.90±1.48 times a day. In CIC, men use 40 cm and women 20 cm long catheters. Men prefer catheters with CH 14/40 cm (40.7%) and women with CH 12/20 cm (15.9%) more than others (Table 2).

All of the patients stated that they prepared all the necessary materials before the procedure. Sterile gel-packed catheter (hydrophilic catheter) (100%), urine bag (73.1%), wet wipes (70.3%), disposable gloves (42.1%), urine drainage container (32.4%), protective cover / cloth in CIC application of patients (22.1%), napkin (19.3%), antiseptic solution (batikon etc.) (17.9%), warm water (9.7%), sterile sponge (gauze) (9.7%), mirror (9.7%), dirty bag / waste container (8.3%), towel (5.5%), soap (2.8%) and material tray (0.7%). All patients perform CIC using a sterile gel-packed catheter (hydrophilic catheter). The answers of the patients regarding the evaluation of their genital areas in terms of negativity (discharge, deterioration in tissue integrity, etc.) before the procedure; no (42.8%), sometimes (50.3%), yes (6.9%). Regarding whether the bladder fullness control is checked before the procedure, the patients; no 79.3%, sometimes 20%, yes 0.7%. It was determined that the majority of the patients (65.5%) did not wash their hands before the procedure (Table 3).

While applying the CIC application, women; dorsal recumbent (21.4%), semi fowler (13.1%), sims (6.9%), fowler (4.8%) and supine (2.1%) men; semi fowler (47.6%), supine (33.8%) and fowler (33.1%) positions are preferred. It was determined that the majority (71.7%) did not clean the genital area during the procedure. Data on catheter advancement distances during the procedure; until the entire catheter is inserted (60.7%), until the urine comes out (33.8%), up to half of the catheter (4.8%), and up to 3/4 (0.7%) of the catheter. Considering the patients' use of more than one CIC with the same catheter; While 54.5% stated that they did not implement it, 45.5% stated that they did. The amount of urine discharged at one time in CIC application was determined as 100-999 ml (31.7%), 1.000 ml and above (68.3%) (Table 4).

It was determined that the majority of patients did the genital area cleaning after the procedure with a yes response of 56.6%. Considering the level of washing hands of the patients after the procedure; it is seen that the majority give the answer sometimes (38.6%). Considering the state of bladder fullness control after the procedure; It was determined that the majority of the patients did not perform bladder fullness control, with a no response at the level of 78.6%. Post-procedure urine of the patients (in terms of color, smell, amount); no (13.1%), sometimes (64.8%) and yes (22.1%). Considering the responses of the patients to inform the healthcare professionals if they detect an abnormal situation; 29.6%, sometimes 56.6%, yes 13.8% (Table 5).

DISCUSSION

In this study, the number of male patients with paraplegia was higher than that of females with paraplegia. According to the studies, it has been determined that the rate of women in the prevalence of CIC application is lower than that of men (10,17). The data in the mentioned studies support the result of this study. It was determined that the age distribution of the patients with paraplegia in the study was between the ages of 18-70. While the majority of the patients (33.8%) with paraplegia were high school graduates at the education level, it was observed that there were also literate patients. According to the results obtained; The trainings to be planned regarding the CIC application should be planned in a way that appeals to individuals of all age groups and education levels.

Different results were obtained in studies investigating of patients with paraplegia who applied CIC (18,19). Considering the duration of CIC administration in this study; While there is a substantial number of patients between 0-3 years (32.4%), the majority consists of patients (35.9%) who practice between 4-7 years. It has been determined that there are also patients who have continued the application for 16 years or more. When we look at previous studies on the sustainability of

Table 1. Descriptive characteristics of patients who applied CIC with paraplegia (N:145)

Descriptive Characteristics	**n**	**%**
Sex		
Female	43	29.7
Male	102	70.3
Age (36.43±13.29 age, min:18-max:70)		
18-30 age	64	44.1
31-43 age	41	28.3
44-56 age	27	18.6
57-70 age	13	9.0
Education Status		
Literate	7	4.9
Primary school graduate	26	17.9
Secondary school gradute	47	32.4
High school	49	33.8
Associate degree	5	3.4
Licence	11	7.6

Table 2. Characteristics of patients with paraplegia regarding the use of CIC (N:145)

Features related to CIC use			**n**	**%**
CIC application times (2.11±1.04 year, min:3 ay-max:20 year)				
0-3 year			47	32.4
4-7 year			52	35.9
8-11 year			36	24.8
12-15 year			3	2.1
16 year and above			7	4.8
Number of CIC applications in a day (4.90±1.48 times, min:1-max:8)				
1 time			4	2.8
2 times			7	4.8
3 times			8	5.5
4 times			46	31.7
5 times			11	7.6
6 times			54	37.3
7 times and above			15	10.3
The number of the catheter used when applying the CIC*	**Women (n=43)**		**Men (n=102)**	
	n	**%**	**n**	**%**
CH 10/40 cm	-	-	2	1.4
CH 12/40 cm	-	-	35	24.1
CH 14/40 cm	-	-	59	40.7
CH 16/40 cm	-	-	6	4.1
CH 10/20 cm	1	0.7	-	-
CH 12/20 cm	23	15.9	-	-
CH 14/20 cm	18	12.4	-	-
CH 16/20 cm	1	0.7	-	-
* Percentages are based on N=145.				

CIC implementation; it becomes clear that these patients should be followed regularly in their lives outside the hospital and should be informed whether they continue the practice or not (19,21,22).

In this study considering the frequency of CIC application; It is seen that CIC is performed mostly 4 (31.7%) and 6 times (37.3%) a day by the patients with paraplegia.

Table 3. Responses of the patients regarding the pre-procedural steps of CIC (N:145)

Pre-Process Steps	n	%
The state of preparing all the necessary materials		
Preparing	145	100
Materials used in CIC application*		
Sterile gel-packed catheter (hydrophilic catheter)	145	100
Urine bag	106	73.1
Wet wipes	102	70.3
Disposable gloves	61	42.1
Urine drainage container	47	32.4
Protective cover / cloth	32	22.1
Napkin	28	19.3
Antiseptic solution (batikon etc.)	26	17.9
Warm water	14	9.7
Sterile sponge (gauze)	14	9.7
Mirror	14	9.7
Dirty bag / Waste container	12	8.3
Towel	8	5.5
Soap	4	2.8
Material tray	1	0.7
Evaluation of the genital area in terms of discharge, deterioration of tissue integrity, etc.		
Does not evaluate	62	42.8
Evaluates Sometimes	73	50.3
Evaluates	10	6.9
The state of controlling the fullness of the bladder		
Not checking	115	79.3
Checking sometimes	29	20.0
Checking	1	0.7
Hand washing status		
Not washing	95	65.5
Washing Sometimes	28	19.3
Washing	22	15.2

*More than one answer has been given. Percentages are based on N=145.

It was determined that the most preferred catheter number in male patients with paraplegia was CH 14/40 cm, and CH 12/20 cm in women with paraplegia. In the literatüre, similar to this study It has been determined that the duration of CIC administration should not exceed 4-6 hours, and the appropriate catheter diameter in adults is Fr 12-14 (20,21). Moreover, the type of catheter and the number of CIC applications affect the use level of the patients and the risk of complications that may develop (18,22). In addition to the majority of the individuals who perform the application at the appropriate frequency and with the correct catheter number, it is seen that other individuals need to be informed to be evaluated.

In this study, it was stated that all patients with paraplegia prepared all necessary materials before the procedure. Considering the answers to the questions asked about the materials used in CIC, it was determined that all the necessary materials were not prepared by all the patients, except the sterile gel-packed catheter (hydrophilic catheter) (100%). Different from the materials to be prepared, it was determined that wet wipes (70.3%) and soap (2.8%) were used. It is recommended to use soap-free, irritating and chemical-free products for cleaning the genital area (23). Considering the levels of wet wipes (29.3%) used for cleaning the genital area during the procedure, wet wipes (82.2%) and soap (1.7%) used for cleaning the genital area after the procedure; it is

seen that some of the individuals do not have sufficient knowledge about the materials that should be used in ensuring the cleaning of the genital area.

According to the studies, it was determined that the selected catheter type and the individual's with paraplegia CIC self-administration increase (18,24,25). Hydrophilic type catheter minimizes the risk of developing complications (20,26-28). In this study, the fact that all individuals perform CIC on their own and use a hydrophilic catheter is important in terms of the risk of complications that may develop. In CIC, a bag or container is needed for urine discharge (7,8,15,21). In this study; It was determined that the use of urine bag was at a higher level than the use of a urine emptying container.

The literature emphasizes that failure to clean the genital area, not complying with aseptic techniques, not paying attention to hand washing technique, and not performing CIC under hygienic conditions increase the risk of urinary infection (20,29). It has been determined that there are many complications that develop due to improper CIC application (8,14,30,31). In this study, when the data obtained on washing hands before the procedure, ensuring genital area cleaning during the procedure, ensuring genital area cleaning after the procedure, and washing hands are evaluated, the risk of developing complications related to CIC application is thought to be high. It was determined that cleaning the genital area during the procedure (28.3%) was less than after the procedure (81.4%).

Bladder fullness control, which has an important place in determining the frequency of CIC application, should be performed before and after the procedure (3,4,7,8,15,32). Considering the data obtained on this subject, it is seen that the vast majority of patients do not regularly check their bladder fullness. The push forward distance of the catheter and the application of the catheter without infection are important in terms of not causing the development of complications such as urethral perfusion, urethral bleeding, urinary system infection, etc. (3,4,6,7,8,13,14,29,33).

Table 4. The answers of the patients regarding the steps of the CIC application during the procedure (N:145)

Steps During the Process	**Women (n=43)**		**Men (n=102)**	
The position in which the application is carried out*	**n**	**%**	**n**	**%**
Half sits (semi fowler)	19	13.1	69	47.6
Sits (fowler)	7	4.8	48	33.1
Supine (supine)	3	2.1	49	33.8
Dorsal recumbent	31	21.4	-	-
Half side (sims)	10	6.9	-	-
Genital area cleaning status			**n**	**%**
Not doing			104	71.7
Doing Sometimes			18	12.4
Doing			23	15.9
Catheter push forward distance				
Until the entire catheter is inserted.			88	60.7
Until the urine comes			49	33.8
Halfway down the catheter			7	4.8
Up to 3/4 of the catheter			1	0.7
Multiple CIC applications with the same catheter				
Not applying			79	54.5
Applying			66	45.5
Maximum amount of urine discharged at one time in CIC application				
100-999 ml			46	31.7
1.000 ml and above			99	68.3
*More than one answer has been given. Percentages are based on N=145.				

Table 5. Responses of the patients regarding the post-procedure steps of CIC (N:145)

Post-Processing Steps	n	%
Genital area cleaning status		
Not doing	27	18.6
Doing Sometimes	36	24.8
Doing	82	56.6
Hand washing status		
Not washing	26	18.0
Washing Sometimes	56	38.6
Washing	63	43.4
The state of controlling the fullness of the bladder		
Not checking	114	78.6
Checking sometimes	30	20.7
Checking	1	0.7
Evaluation of urine (in terms of color, smell, amount)		
Not evaluation	19	13.1
Evaluating sometimes	94	64.8
Evaluating	32	22.1
Informing healthcare professionals when an abnormal situation is detected		
Not informing	43	29.6
Informing sometimes	82	56.6
Informing	20	13.8

It is revealed that it poses a risk for the complications that may develop in the patients when the push forward distance of the catheter (up to 60.7% of the entire catheter is inserted) is questioned.

In CIC application, it is emphasized that the genital area should be checked before the procedure (4,6,7,15). According to the results of a case report, it is important to regularly evaluate the genital area in terms of complications that may develop. According to the study, as a result of the data we obtained on the evaluation of the genital area in terms of negativity, we think that it may be late or not detectable in terms of early detection of complications that may develop in the genital area.

It is stated that in case the applied catheter is contaminated (inserting the catheter in the wrong area, using the same catheter more than once, etc.), it should be discarded and the procedure should be performed with a new catheter (3,4,6,34). More than one use of the same catheter is the cause of contamination and this This situation will bring along many complications (35,36). Considering the responses given to the situation of multiple CIC applications with the same catheter in the study, it was determined that the patients did not have sufficient knowledge on this subject. This situation may be due to many reasons such as economic reasons, laziness, difficulty in transportation, etc.

Urine output of 1000 ml or more at one time is not recommended, as it causes bladder collapse and cramping (4,6,7,8,15). The number of individuals with 1000 ml or more urine output at one time in CIC is 68.3%. gives us a serious warning in this regard. The importance of applying to a health institution in case of any problems related to the application and in terms of routine follow-ups is mentioned in patients who apply CIC (37,38). Findings that may indicate the presence of an abnormal situation in CIC application may also be possible by evaluation of urine. For this reason, the evaluation of urine (in terms of color, smell, amount) is of great importance (4,7-9,15). The data obtained on the status of urine evaluation and the level of notifying healthcare professionals in the detection of abnormal conditions suggest that it may increase the risk of being late in the intervention in case of a developing problem.

The research has some limitations. The reason for this is that it required time constraints as it was a master thesis work. In addition, the fact that the research data were collected according to patient with

paraplegia statements and only in one institution is a limitation in terms of the generalizability of the research result. The results obtained from the study can be generalized to the patients with paraplegia who applied to the mentioned institution on the specified dates.

As a result; The practices of patients with paraplegia regarding the pre-, during and post-procedure steps in CIC were determined. The study examined the application of CIC to patients with paraplegia during the pre-procedure, intra-procedure and post-procedure stages and found that they did not have sufficient knowledge. It may be recommended to plan and implement training on pre-, during and post-procedure steps during hospitalization for patients who undergo CIC with paraplegia.

CONCLUSION

It can be recommended to plan trainings on the steps of the procedure during the hospitalization period for patients who apply CIC with paraplegia and to study the knowledge levels of nurses about CIC. In addition, patients should be educated with brochures/booklets on the importance of fluid consumption, genital area cleaning, hand washing, use of a bladder and urine drain, bladder fullness control, the maximum amount of urine that should be emptied at one time, evaluation of urine, possible complications, and situations that should be reported to healthcare professionals. These trainings to be planned regarding CIC application should be planned to appeal to all age groups and education levels.

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