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Current Status of Clean Intermittent Catheterization Education in South Korea

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Purpose: Clean intermittent catheterization (CIC) is a safe and effective method for bladder emptying under various conditions. However, it is also a delicate daily procedure that requires high-quality education. This study investigated the current status of CIC education in South Korea.

Methods: An online anonymous survey inquiring CIC education circumstances at both outpatient clinic and ward was conducted via Google Forms in March 2023. The URL link was sent 3 times to the clinical practitioners conducting urodynamic tests in each hospital. These practitioners were nurses and members of the Korean Continence Society whose workplaces were either secondary or tertiary hospitals offering urodynamic tests.

Results: The survey questionnaires were administered to 93 clinical practitioners from 60 different hospitals. The overall response rate was 33%. The urodynamic testing room was commonly used for CIC education, and private space solely designated for CIC education was available in less than 3%. The education materials provided by a catheter company were the most widely used (50%), followed by materials provided by each hospital or the urology department (30%). There were no public or formal CIC education materials provided by urological associations. The initially recommended catheter was a single-use catheter from various companies. However, the catheter selection was limited by national health insurance coverage in 14% of the cases. Furthermore, the mean consumed time for a single session of CIC education was 11–30 minutes in 60% of the cases, 31–60 minutes in 20%, and 5–10 minutes in 16.7%. Majority of the respondents complained about limitations in time and place to provide adequate education to improve patients' understanding on CIC.

Conclusions: The clinical practitioners mainly complained about the lack of time and place to provide adequate CIC education to patients. Furthermore, the limited amount of national insurance coverage for single-use catheters hindered the free selection of appropriate catheters.

Keywords: Intermittent catheterization; Neurogenic bladder; Reimbursement; Patient education

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- **Research Ethics:** The study is based on survey data collected from clinical practitioners and does not include research involving human participants or animal subjects. Therefore, Institutional Review Board's approval was not required.
- **Conflict of Interest:** No potential conflict of interest relevant to this article was reported.

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INTRODUCTION

Clean intermittent catheterization (CIC) is a commonly used method for bladder emptying among patients with neurogenic bladder. The goal of neurogenic bladder management is to preserve upper urinary tract function, minimize urinary tract infection, and improve urinary incontinence and patient quality of life [1, 2]. CIC is also recommended for nonneurogenic conditions, such as postoperative urinary retention, continent diversions and orthotopic ileal neobladder [3, 4]. The combination of pharmacotherapy and adequate CIC enables the control of micturition. A proper CIC requires an individualized interval and frequency that prevent urine leakage. However, CIC is reported to be negatively associated with quality of life if is not properly performed and vice versa [5-8].

Beginning CIC is a big step for patients and their caregivers. They need to find a comfortable catheter and position as well as adequate catheterization frequency. However, impaired dexterity and/or mobility worsen the problem [7, 9]. Furthermore, patients on CIC are prone to urethral bleeding, pain, and urinary tract infection [7, 8, 10]. Catheterization is usually performed several times a day and repeatedly performed daily. Consequently, this daily practice necessitates tremendous motivation and knowledge among patients, including the requirements, process, tips, and cautions of the procedure [11].

It is well known that individualized, stepwise, and centralized intensive education is important for patients' improved understanding and compliance to CIC [10, 12-14]. However, educational circumstances and available infrastructure, including place, time, competence of the educator, and education materials, may vary among clinics. Several studies have investigated education outcomes in various clinics and nations [15, 16]. However, studies on nationwide education environment are limited. The present study investigated the current status of CIC education from clinical practitioners among working in various hospitals in South Korea.

MATERIALS AND METHODS

An online anonymous survey was conducted via Google Forms in March 2023. The survey questionnaires were administered to 93 clinical practitioners from 60 different hospitals. The URL link (https://forms.gle/o3ZJZVrdsieKXX29A) was sent once via email and twice via text message to the clinical practitioners conducting urodynamic tests in each hospital. These practitioners were nurses and members of the Korean Continence Society whose workplaces were either secondary or tertiary hospitals offering urodynamic testing.

The questionnaire inquired detailed items for CIC education circumstances in both outpatient clinic and ward settings – including characteristics of the CIC educator; education places and materials; types of initially recommended catheters; and education loading - number of cases per month; and mean consumed time for each case. The participants were required to freely write the reasons for their answers and the main problems in the current education environment.

RESULTS

The overall response rate was 33%, and all the subjects were nurses.

Characteristics of the CIC Educator and Education Target

The CIC education was mainly provided by clinical practitioners who were in charge of the urodynamic tests, followed by physician assistants of the urology department who did not participate in the tests. Same-sex education (male patients–male educator, female patients–female educator) was feasible to half of the cases (Table 1). In pediatric or adolescent cases, CIC education was mainly provided to parents or guardians. For adult patients, the proportion of the main education target significantly varied depending on the patients' age, general condition, dexterity, and cognitive function.

Table 1. Characteristics of CIC educators

Question	OPD	Ward
Q1. Who is mainly in charge of CIC education?		
Clinical practitioner in charge of UDS	22 (73)	14 (46)
Physician assistant not in charge of UDS	5 (17)	9 (30)
RN of URO OPD	2 (7)	2 (7)
Others	1 (3)	5 (17)
Q2. Is same-sex education is feasible?		
Yes	15 (50)	15 (50)
No	15 (50)	15 (50)

Values are presented as number (%).
CIC, clean intermittent catheterization; OPD, outpatient department; UDS, urodynamic study; RN, registered nurse; URO, urology department.

Characteristics of the Education Place and Materials

For outpatients, more than half of the CIC education sessions were conducted in the urodynamic testing room (56.7%). For inpatients, more than half of the CIC education sessions were conducted in the ward. In both cases, private space solely designated for CIC education sessions was available in less than 3% (Fig. 1).

The education materials provided by a catheter company were the most widely used (50%), followed by materials provided by each hospital or the urology department (30%). No public or formal CIC education materials were provided by institutions, such as urological associations (Fig. 2).

The initially recommended catheter was a single-use catheter from various companies. The recommendation rate of single-use catheter was 90% in outpatient clinic and 83% in ward patient. The reason for the high recommendation of reusable catheters was the absence of urodynamic test results, which is mandatory for national health insurance coverage in South Korea, as well as the limited amount of insurance coverage for pa-

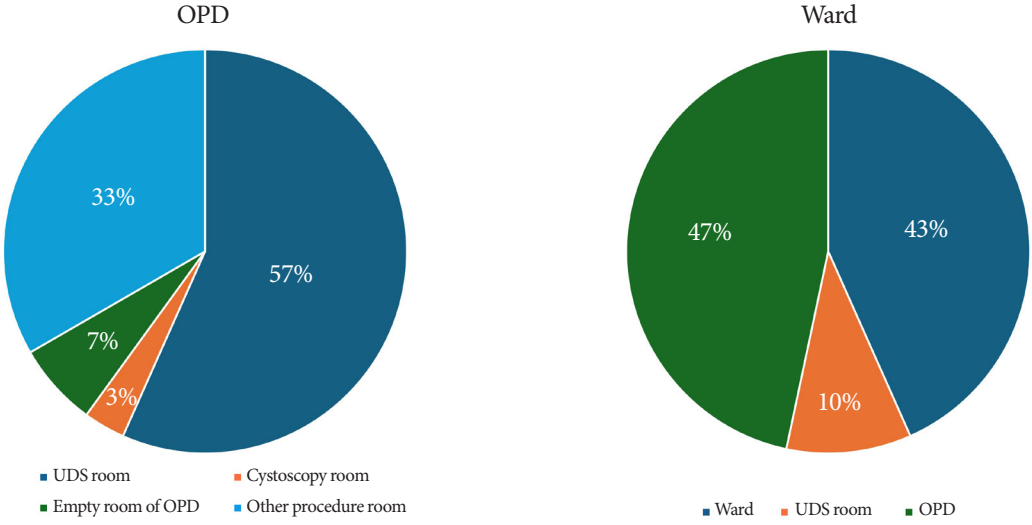

Fig. 1. Response to question 2 – Where does most CIC education take place? CIC, clean intermittent catheterization; OPD, outpatient department; UDS, urodynamic study.

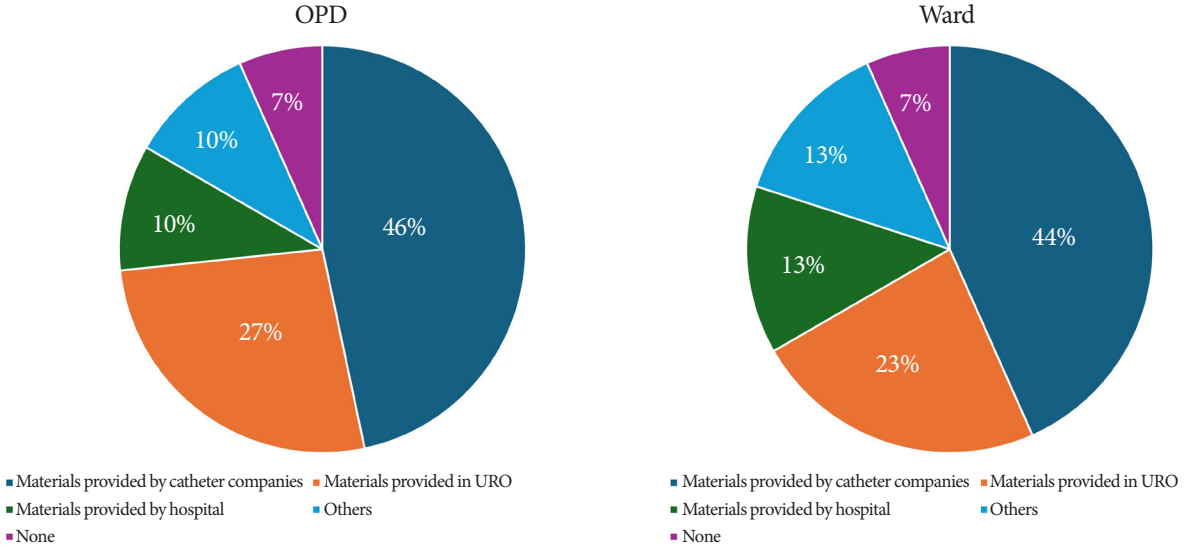

Fig. 2. Response to question 3 – What is the source of most utilized material for CIC education? CIC, clean intermittent catheterization; OPD, outpatient department; URO, urology department.

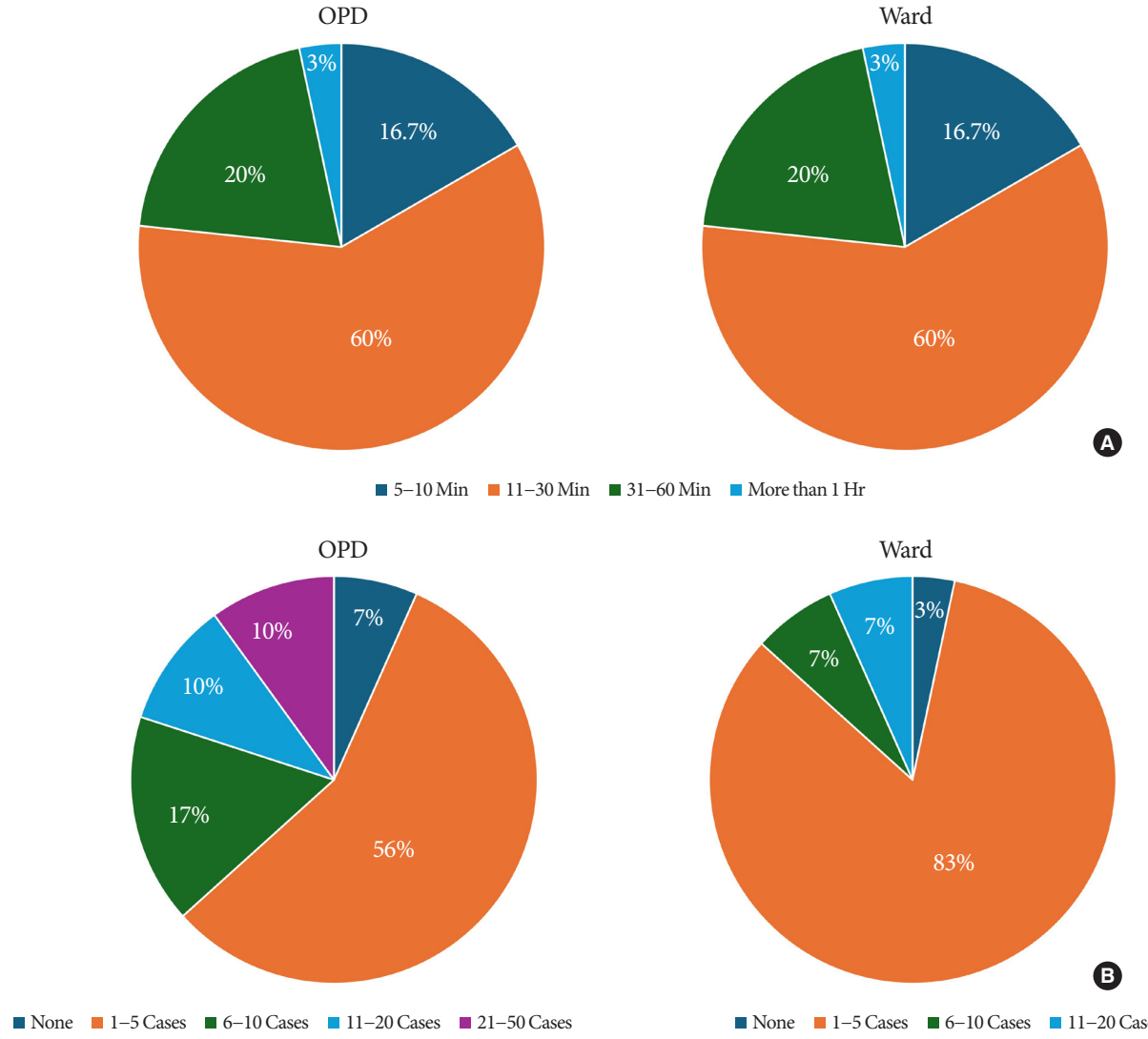

Fig. 3. Response to question 3 – (A) How much time is consumed for initial single session of CIC education? (B) How many cases of CIC education take place per month? CIC, clean intermittent catheterization; OPD, outpatient department.

tients solely depending on CIC for bladder emptying (requiring more than 5 catheters per day).

Education Loading and Complaints From Clinical Practitioners

The mean consumed time for a single session of CIC education was 11–30 minutes in 60% of the cases, 31–60 minutes in 20%, and 5–10 minutes in 16.7% (Fig. 3A). The number of CIC education sessions depended on the hospital volume, but approximately 70%–80% were performed within 10 cases per month. More CIC education sessions were required in the outpatient clinic than in the ward (Fig. 3B). Majority of the respondents complained about the limited time and place to provide adequate education to patients.

DISCUSSION

The present study investigated the current status of CIC education in South Korea. Information was obtained from clinical practitioners — nurses actively working in the urology department in secondary or tertiary hospitals in South Korea. Specialized personnel who solely takes charge of providing CIC education and private education places were unavailable. Furthermore, validated CIC education materials were lacking. Al-

though majority of the initially recommended catheters were single-use catheters, some cases were affected by the limited national health insurance coverage.

The CIC educator encountered 2 main obstacles. First, the unpredictability of CIC education is a sudden burden due to the absence of a fixed educator. One session takes at least 30 minutes per case, but because there is no training fee, a stable manpower distribution is difficult—hospitals are reluctant to distribute manpower as CIC education does not generate income. Second, there is no private place for CIC education. Vacant spaces in the ward, outpatient clinic room, or urodynamic study room can be used for the CIC education sessions. However, this approach is not always feasible. For inpatients, the session schedule can be modified according to space availability, but in the outpatient setting, timely education is mandatory. In some cases, patients need to endure an education environment where privacy is not guaranteed.

CIC education within 10 cases per month might not be too much. However, a single 30-minute session is insufficient to explain the needs, methodology, cautions, and key takeaways of CIC and to achieve a high level of understanding among patients. A high-quality CIC education requires a stepwise approach. If step-by-step education is provided to patients as recommended in the literature, the number of CIC education sessions per month might drastically increase as such education will be provided repeatedly to resolve patients' difficulties performing CIC or questions about their current CIC status.

Some might assume that our physical loading of CIC education is overestimated. Bickhaus et al. [17] reported the feasibility of CIC education for patients scheduled for pelvic organ prolapse surgery in an outpatient setting to prepare for postoperative urinary retention. The study group concluded that the CIC education session only took a median of 3.7 minutes and that majority of the patients were able to retain their CIC skills weeks after being taught in the clinic. However, the study has critical limitations. First, the educating nurse prepositioned the patient and taught her where to place the catheter, which does not reflect the daily routine wherein patients need to position and find the urethral meatus by themselves. CIC education is considered to be successful if the patients and/or caregivers are able to perform CIC from the beginning to the end. Second, CIC education as a preventive strategy for postoperative urinary retention is provided to patients who are in a better condition, which can result in biased patients' understanding. Surgical treatment (operation) is usually recommended for patients with good physical and mental performance status. Finally, motivating patients to participate in CIC education sessions is challenging, especially if they do not feel any subjective discomfort on bladder emptying but their urodynamic findings suggest a desperate need for CIC. Furthermore, patients who solely depend on CIC or require CIC several times a day due to incomplete bladder emptying are exposed to a substantial amount of emotional stress and fear that their mental care also takes a lot of time.

In summary, CIC educators in South Korea suffer from a lack of adequate place and sufficient time for CIC education sessions to motivate patients and improve their understanding. At present, some companies producing disposable catheters offer free repetitive education for the target patients and are developing qualified education materials in collaboration with the Korean Continence Society. However, support from catheter companies should not be the main source for CIC education as clinicians and clinical practitioners working in hospitals need to take charge of patients' general performance and overall health-status. In such context, we need effective solution to rise social and national attention to solve the problem. One possible solution is imposing a CIC education fee. If hospital could charge education fee for CIC like diabetes and chronic kidney disease education, it would be motivated to appoint qualified and regular CIC educators and establish a suitable room for CIC education. Moreover, if patients are required to pay a certain amount of money for their CIC education, they might participate more actively and pay better attention.

The other possible solution might be focusing on various education materials to decrease the loading of clinical practitioners. The utilization of video and paper materials to ensure continuous education is imperative. The coronavirus disease 2019 pandemic has prompted people to use YouTube to search for the information they need. In August 2019, Culha et al. [18] evaluated the quality of YouTube videos regarding CIC. Approximately 64% of the available videos contained useful information, and nearly 80% were uploaded by companies or medical advertisements. In fact, a catheter company that is in contact with patients is expected to be very active and interested in patient education as patients' persistence to CIC is directly related to profit. However, it is noteworthy that companies providing CIC materials are not free from conflicts of interest. In the present study, more than 90% of the educational materials provided by the companies were used as there were no formal education materials. To address this problem, the Korean Continence So-

ciety is currently producing official CIC educational materials (video clip), although it is somewhat aided by the catheter company.

Although it seems minor, some CIC educators also complained about the limited national insurance coverage of single-use catheters (up to 6.3 United States dollars per day). The current insurance coverage system restricts patient selection on the types of catheters, especially when they require more than 3 or 4 times of CIC per day—6 catheters are covered in the case of the cheapest one. The total amount of reimbursement and its percentage vary among countries. In the United States, up to 200 catheters with a prescription per month are covered, although the percentage varies among states. In Japan, 70% of the total cost (with no upper limit) of catheters with a prescription is covered. The advantages of hydrophilic catheters over reusable catheters have been reported in several studies [19, 20] that using disposable hydrophilic catheters for CIC is recommended if possible. As CIC is performed daily, long-term catheterization could be an economic burden for majority of the patients. The maximum coverage of 6.3 United States dollars per day is not low, but the total reimbursement amount should reflect the market price of recently released single-use catheters.

The main limitations of present study are follows. First, all respondents were nurses that the representativeness of the survey results might seem limited. However, nurses are main clinical practitioners who are in charge of urodynamic study in most hospitals based on contact information updates performed in 2023. In addition, the survey was distributed to clinical practitioners working at training or university hospitals where urology department is present. Second, the overall response rate of 33% is low. Nevertheless, it is almost impossible to force responses in anonymous survey. In future studies, the study subjects will be expanded and baseline demographics of respondents will be included to enable detailed statistical analysis and overcome these limitations.

Finally, the reliability and validity of the survey questions are not clearly indicated. There were no prior studies that could be used as reference. Most of the studies in the literature focused on methodologies that patients' understanding and satisfaction were maximized by repetitive and patient-centered training. In other words, pre-existing studies focused on the improving educational methods while fixing factors related to hospital, society, and national policies that individual educators cannot overcome by themselves. Thus, the reliability and validity of questionnaires used in present study might seem limited due to the scarcity of related studies. From a different perspective, this study has potential pioneering role in reflecting current status of CIC education and could be a guidance for future studies.

At present, human resources, places, and education materials for high-quality CIC education in South Korea are limited. The study participants mainly complained about limitations in time and place to provide adequate education to patients. However, hospitals are reluctant to hire additional personnel or establish a proper room for CIC education as it does not generate income. In addition, the limited amount of national insurance coverage for single-use catheters hinders the free selection of adequate catheters and poses burden to patients requiring more than 4 catheters per day.

AUTHOR CONTRIBUTION STATEMENT

· Conceptualization: *SOK*
· Data curation: *JHS*
· Methodology: *JHS*, *SB*
· Project administration: *JHK*, *SOK*
· Writing - original draft: *JHS*
· Writing - review & editing: *SB*, *JHK*, *SOK*

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