Teaching the procedure of clean intermittent catheterisation*

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The procedure of clean intermittent catheterisation (CIC) by 40 carers (23 males and 17 females) for spinal cord injury patients was evaluated (Assessment 1), and was subdivided into 40 steps with one point allotted for each step for evaluation purposes. Those who scored more than 32 out of 40 were excluded from the study. The carers who were enrolled in the study were taught the steps of CIC by personal teaching sessions. Assessment 2 was performed on the third day, and the steps which were unsatisfactory were explained to the carer, with positive feedback. Assessment 3 was carried out after 3 days. In Assessment 1, the mean score was 2, and after the first individualised teaching session, the score in Assessment 2 was 25 ($p < 0.01$); subsequent to the second teaching session, it further improved to 32 ($p < 0.01$) in Assessment 3.

The relationship of carer to patient (son, daughter, wife, brother etc), age, and sex of the carer vs sex of the patient did not have any influence on the performance of CIC. However, the literacy status of the carer did have a bearing on the performance. The performance of graduates/postgraduates after a second teaching session was 37, whereas the performance of illiterate carers was only 27. The monthly income, habitat (rural vs urban) and occupation of the carers had a bearing on the performance; however, this was related to their literacy status. It is thus concluded that, with individualised teaching sessions and positive feedback, carers who are not literate (a situation frequently existing in developing nations) can be taught to perform satisfactorily the procedure of CIC.

Keywords: paraplegia; tetraplegia; neuropathic bladder; urethral catheterisation; spinal cord injury.

Introduction

Clean intermittent catheterisation (CIC) is a safe, simple and inexpensive method of managing patients with a neuropathic bladder.¹ Unless the procedure is carried out meticulously and complete bladder emptying is achieved without urethral trauma, the patient is likely to develop complications. If the relatives declare that it is not possible to perform the procedure, it becomes a futile exercise. At present, in many centres in this

country (India) neither doctors nor nurses demonstrate the procedure to the carers. They do not generally make any attempt to discover any difficulties being faced by the carers in carrying out CIC. The procedure needs to be assessed while the carers perform it, in order to ensure that it is performed correctly.

The present study explores the relationship, if any, between certain demographic factors of carers of spinal cord injury patients and their level of performance of CIC. These demographic factors include the relationship of the carer to the patient, and sex, age, educational status, occupation, monthly income and home environment of the carer. The problems in developing countries are twofold: (1) there is no institution to provide long term care of civilian

*Please note that there are several additional tables concerning this article, providing more detailed information. These may be obtained, if desired, by writing to the author: Dr S Vaidyanathan, Registrar in Spinal Injuries, Regional Spinal Injuries Centre, District General Hospital, Town Lane, Kew, Southport, Merseyside PR8 6NJ, England.

spinal cord injury patients, who therefore have to be cared for in their home environment by their own relatives; (2) even in hospitals, there is a shortage of nursing staff and therefore bladder and bowel care is normally provided by the relatives of the patients. Hence this study was planned to investigate the level of performance of carers and their demographic profile.

Materials and methods

The subjects of the study were the carers of traumatic paraplegic/tetraplegic patients, both hospitalised and those attending the urology and the emergency outpatients departments of Nehru Hospital, Pgimer, Chandigarh. Those carers who fulfilled the following criteria were included in the study: an age range of 18–65 years, normal manual dexterity and good visual acuity.² The carer also required to look after most of the patient's needs.

An 'observation check list' (available from the authors) consisting of 40 steps of CIC was specifically developed to assess the performance of carers. Each of these 40 steps carried a score of one point. The reliability of the observation check list was checked by using the inter-rater reliability method. Reliability was found to be highly significant.

Method of data collection

On the first day of the study, the investigator introduced himself/herself to the patient and to his/her carers, developed rapport with them and took verbal consent from the patient and the carers. Each carer's level of performance of CIC was evaluated (Assessment 1) and those who scored more than 32 out of 40 (80% or more) were excluded from the study. On the second day of the study, in the morning, the investigator demonstrated the 40 steps of CIC to the individual carer. After observing the investigator performing the CIC and discussion, the carers performed CIC independently. On the fourth day, the procedure was evaluated by the investigator while being carried out by the carer (Assess-

ment 2). The investigator noted those steps of CIC which were not carried out satisfactorily by the individual carer. The investigator again explained these particular steps. On the seventh day, the investigator again assessed the carer while he or she performed CIC (Assessment 3).

Analysis and interpretation: demographic variables and level of performance of CIC

Seven demographic variables (see below) were taken into consideration to find out their relationship, if any, with the level of performance of CIC.

Relationship of the carers to SCI patients and their level of performance of CIC

Of the 40 carers in this study, 7 (17.5%) were parents, 6 (15%) were spouses, 4 (10%) were children, 15 (37.5%) were siblings and 8 (20%) were other relatives or friends of the patient. There was no significant difference ($p > 0.05$) in the level of performance of CIC between parents, spouses, children, siblings and others at the initial assessment which varied from 1–4. After the first round of teaching, their performance improved to 23–29. After the second individual teaching session and discussion their performance further improved to 29–34. Thus, any motivated relative or friend can be taught to perform CIC and it is not true that only parents will look after their children or vice versa. It is also not true that for the male patient there should be a male carer and vice versa. There is no significant difference ($p > 0.05$) between the performance of male–male, male–female, female–male and female–female carer groups.

The sex of the carers of SCI patients and their level of performance of CIC

Twenty-three (57.50%) were males and 17 (42.50%) were females. There was no significant difference ($p > 0.05$) between male and female carers in their level of performance of CIC. Initially, both male and female

carers scored only 2 out of 40. However, after the first teaching session, their performance improved to 24–25, which further improved to 31 after the second round of individual teaching sessions.

Age of the carers of SCI patients and their level of performance of CIC

Seventeen (42.5%) were in the 16–25 years age group, 11 (27.5%) were in the 26–35 years age group, 5 (12.5%) were in the 36–45 years age group and 7 (17.5%) were in the 46–55 years age group. There was no significant difference ($p > 0.05$) between the performance of carers and their age. Carers in all the age groups scored 0–4 initially. However, after the first teaching session, all of them improved to a great extent and achieved a score of 23–26. After the second teaching session their performance further improved to 30–33.

Educational status of the carers of SCI patients and their level of performance of CIC

Thirteen (32.50%) were illiterate, 5 (12.50%) had studied at primary level, 8 (20%) had matriculated, 12 (30%) were graduates and 2 (5%) were postgraduates. There was a significant difference ($p < 0.05$) between the groups according to their educational status and level of performance of CIC. Even the postgraduate carers scored 0 initially. However, after the first teaching session, those carers who were illiterate scored only 20, whereas the postgraduate carers scored 33 ($p < 0.01$). After the second teaching session, the illiterate carers scored 27 whereas the postgraduate carers scored 37 ($p < 0.01$). This shows that illiterate carers can also be taught how to carry out CIC, but they require one or more additional teaching sessions. Appendix I depicts those steps which the illiterate carer found difficult to perform even after the second teaching session.

The occupation of the carers of SCI patients and their level of performance of CIC

Twenty-eight of the 40 carers (70%) were manual workers and 12 carers (30%) were

nonmanual workers such as a clerk, professional or businessman. Initially, there was no significant difference ($p > 0.05$) between the groups according to their occupation and the level of performance of CIC. However, after the first teaching session, the white collar workers scored 29 whereas the manual workers scored only 23. This difference in the level of performance reflects the educational status of the latter group. What should be noted here is that after the second teaching session the latter group's performance improved to 30. Thus, with one or more additional teaching sessions this group's performance can be expected to improve further and even those carers who are illiterate can be expected to perform CIC satisfactorily.

The monthly income of the carers of SCI patients and their level of performance of CIC

Fourteen (35%) had a monthly income of less than 500 rupees, 15 (37.5%) earned 501–1000 rupees and 11 (27.5%) earned more than a 1000 rupees. Initially there was no significant difference ($p > 0.05$) according to the monthly income. However, after the first teaching session, the deprived group with a monthly income of less than 500 rupees scored only 21, whereas the richer carers scored 29.

Habitat of the carers of SCI patients and their level of performance

Twenty-five of the carers (62.50%) came from a rural area and 15 (37.50%) from an urban area. There was no significant difference ($p > 0.05$) between different groups according to their habitat and the level of performance of CIC during the initial stages. However, the rural carers scored only 22 after the first teaching session in contrast to 29 scored by their urban counterparts which, once again, reflects their educational status (Table I)

Discussion

The aim of the present study was to discover the relationship, if any, between certain

Table 1 Performance of carer classified according to his/her habitat and educational status

Educational status	Mean score of carer from rural areas			Mean score of carer from urban areas		
	Assessment 1 before teaching	Assessment 2 after 1st teaching session	Assessment 3 after 2nd teaching session	Assessment 1 before teaching	Assessment 2 after 1st teaching session	Assessment 3 after 2nd teaching session
Illiterate	1.36	19.91	26.91	0	25.5	30
Primary	0	21.5	27.83	0	0	0
Matriculation	1.71	25	31.29	0	27	36
Graduate	7.50	29.5	35.5	4.42	30.08	34.6

Assessment 1 before teaching: F ratio = 1.372, $p > 0.05$.

Assessment 2 after the 1st teaching session: F ratio = 15.135, $p < 0.01$.

Assessment 3 after the 2nd teaching session: F ratio = 13.16, $p < 0.01$.

demographic factors of carers of spinal cord injury patients and their level of performance of CIC in our country (India). Seven demographic factors were included in the study. Initially, before being taught, none of the demographic characters showed any significant difference concerning the level of performance. The relationship of the carer to the patient does not play an important role in the performance of CIC. Any motivated relative or friend can be taught to perform CIC, and it is not correct that only parents will look after their children or vice versa. The age and sex of the carer did not make any difference in the level of performance. Even illiterate carers can be taught how to carry out CIC, but they require more teaching sessions. Nagarajan *et al*³ mentioned that literacy did not play any role in the reconstitution of oral rehydration solutions. Those who scored less than 27 in Assessment 3, were taught the particular steps which they had not performed correctly. Such individualised attention helped them to learn the particular steps which they had found difficult to perform. White collar workers performed better than did manual workers but this reflected upon the educational status of the white collar workers. The performance of richer carers was better than that of poorer carers, again reflecting the educational status of the individual. Rural carers could perform better after the first and second teaching session, which showed that rural carers can also perform CIC satisfactorily, but they require more teaching sessions.

Thus, educational status is the main factor influencing the level of performance of CIC. Instead of just teaching the procedure of CIC once to the carers, the nurse/physician should observe the carers as they perform CIC, note down the incorrectly performed steps, explain these particular steps individually to the carer, observe his/her performance again after a few days, identify the unsatisfactorily performed steps and provide positive feedback. Although, this is time consuming, it will ensure that the carers perform CIC correctly. This does not require costly equipment, but necessitates a dedicated nurse to motivate the carer.

Appendix I

Steps that illiterate carers found difficult to perform even after their second teaching session

- 1 The carer informs the patient that he/she is going to have CIC performed.
- 2 Places a polythene sheet under the buttocks of the patient.
- 3 Exposes the genitalia by removing the pyjamas and folding the shirt up to the umbilicus.
- 4 Washes hands with soap and water prior to catheterisation.
- 5 Cleans the genitalia with cotton wool soaked in plain clean water kept in small bowl, using four swabs prior to catheterisation.
- 6 Retracts the prepuce backward with the left hand and identifies the urethral meatus.
- 7 Holds the penis at a right angle to the body.
- 8 Lubricates a Foley catheter No 12 Fr. up to 6" (3" in female) with sterile lubricating jelly with right hand.
- 9 Inserts the catheter into the urethra into the bladder, to its full length.
- 10 Withdraws the catheter slowly.
- 11 Pulls the prepuce forwards at the end of catheterisation.
- 12 Measures the urine with a measuring glass bottle.
- 13 Cleans the inside of the catheter with a plastic syringe filled with plain cold water five times if there is no tap. If there is a tap, wash the catheter under running water.
- 14 Flushes the catheter with an air filled clean syringe.
- 15 Wipes the catheter with a clean hand towel.

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